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GLOBAL WARMING

HOW TO TURN DOWN THE HEAT



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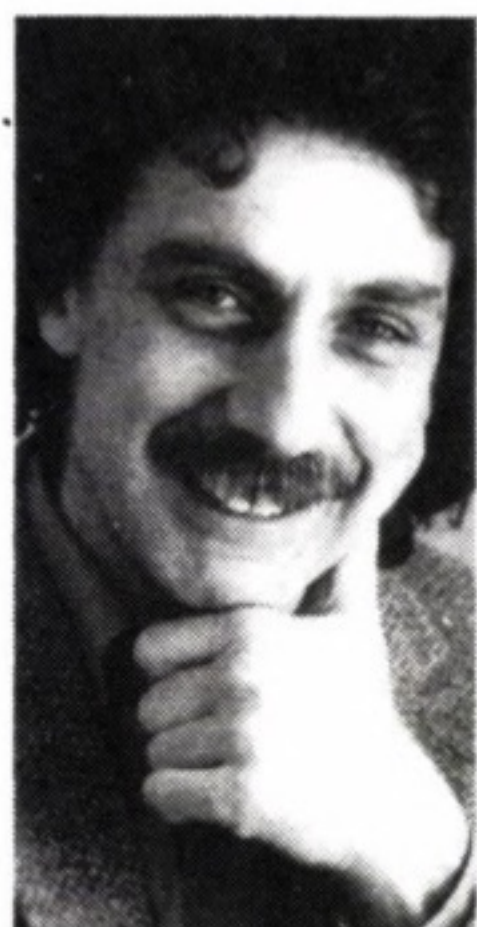
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If the American humourist Mark Twain were alive today he would probably consider retracting his famous comment that 'everyone talks about the weather, but no-one does anything about it'. The weather is still of course the opening gambit in many a conversation:

the rain, the heat or the cold is part of the neighbourly banter of everyday life.

But now it appears we've also done something about it – though hardly for the better. By pumping chemical pollutants into the atmosphere we're reinforcing the 'greenhouse effect', a natural way of warming the earth which until recently was part of the obscure argot of atmospheric scientists. Today the greenhouse effect is as likely to be the focus of daily conversations as the weather. The planet is heating up and world weather patterns are changing. The problem is we may not be able to control the change we've set in motion.

But we can certainly try. This is why we have structured this issue of the NI as

a series of lessons in how to turn down the heat. Let no-one claim that the situation is confused, that we cannot tell what action to take: the way to tackle the climate crisis is as bright and clear as the sun, if only the will were there.

Having spent several months wrestling with the esoterica of climatology I have come to respect what James Lovelock calls the *Gaia* principle – essentially the interconnectedness of life with the earth itself. Lovelock says 'the air is not just an environment for life but is also part of life'. It is the complexity of this interdependence that is both so baffling and so unsettling.

I'll mention one small but illuminating example I stumbled across while researching this issue.

Government biologists in northern Manitoba found last year that the local moose population was dwindling. But they had no idea why. When they examined the bodies they found the animals were infested with ticks. Not unusual in itself since the parasites are found regularly on all moose. But in this case the numbers were five or six times higher than usual. In rubbing up against trees and rocks to rid themselves of the ticks the moose scraped off most of their protective winter guard-hairs. Their bodies thus

exposed, the animals weakened and soon fell to disease.

That solved the riddle of the moose deaths. The more nagging question was: 'why had the tick population blossomed so suddenly?'

Here's where global warming comes into play. Winter snows have been abnormally light the past few years in this part of northern Canada. Ticks normally gorge themselves on moose blood, then tumble to the ground where, with the usual heavy snows, most freeze – though some would survive to breed young for the following spring. Now, however, they are snuggling into warm leaves and burrowing into the soil. The result: an explosion of the pests. Bad news for the moose – and for local native people who still depend on the huge animals for their winter larder.

Links in a chain: it is this kind of overlapping, interdependent relationship between people and the natural environment that is thrown into stark relief by global warming. And why it is critical that steps are taken now to turn down the heat.

Wayne Ellwood

Wayne Ellwood
for the New Internationalist Co-operative

CONTENTS

NI No. 206

APRIL 1990

GLOBAL WARMING

2. CUT FOSSIL FUELS

Empires of black gold 12

The power of the big oil corporations, assessed by Dick Russell.



3. BOOST ALTERNATIVES

Back from the grave 14

As the nuclear industry claims a green mantle, Stephen Hall examines our future energy options.

GLOBAL WARMING – THE FACTS 16

4. BAN CFCs

Can science save us? 18

By Fred Pearce.

5. SAVE THE TREES

Local heroes 19

Susanna Hecht suggests how to save tropical rainforests.

6. FIGHT FOR FAIRNESS

Cry foul, cry freedom 21

We can't stop global warming until we first stop global poverty, argues Vandana Shiva.



Simply – Cooling the greenhouse 22

7. LOVE YOUR NEIGHBOUR

The denial syndrome 24

Anuradha Vittachi offers a cautionary tale of a foolish frog.

Letters 2

Letter from La Paz 3

Update 26

Endpiece: by Mari Marcel Thekaekara 29

Reviews: including Milan Kundera classic 30

Country profile: Sudan 32

Front cover photo: Dave Ellison/The Environmental Picture Library



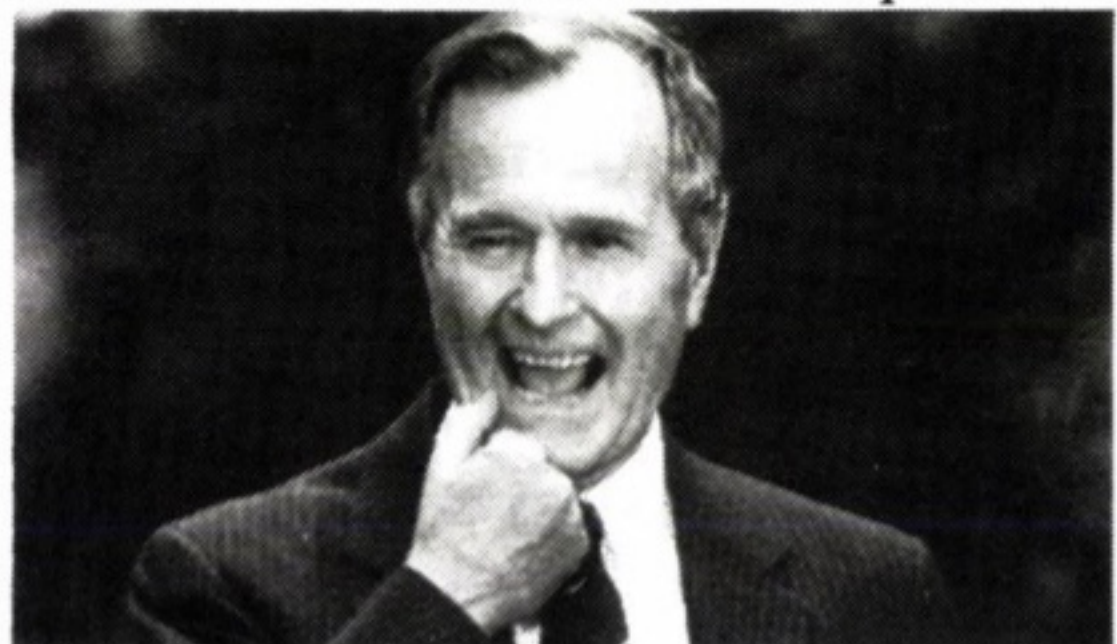
How to turn down the heat 4

Wayne Ellwood searches for an exit from the greenhouse.

1. ABANDON GROWTH

The cosmic ark 8

Grappling with the growth monster. Jeremiah Creedon sets himself a quest.

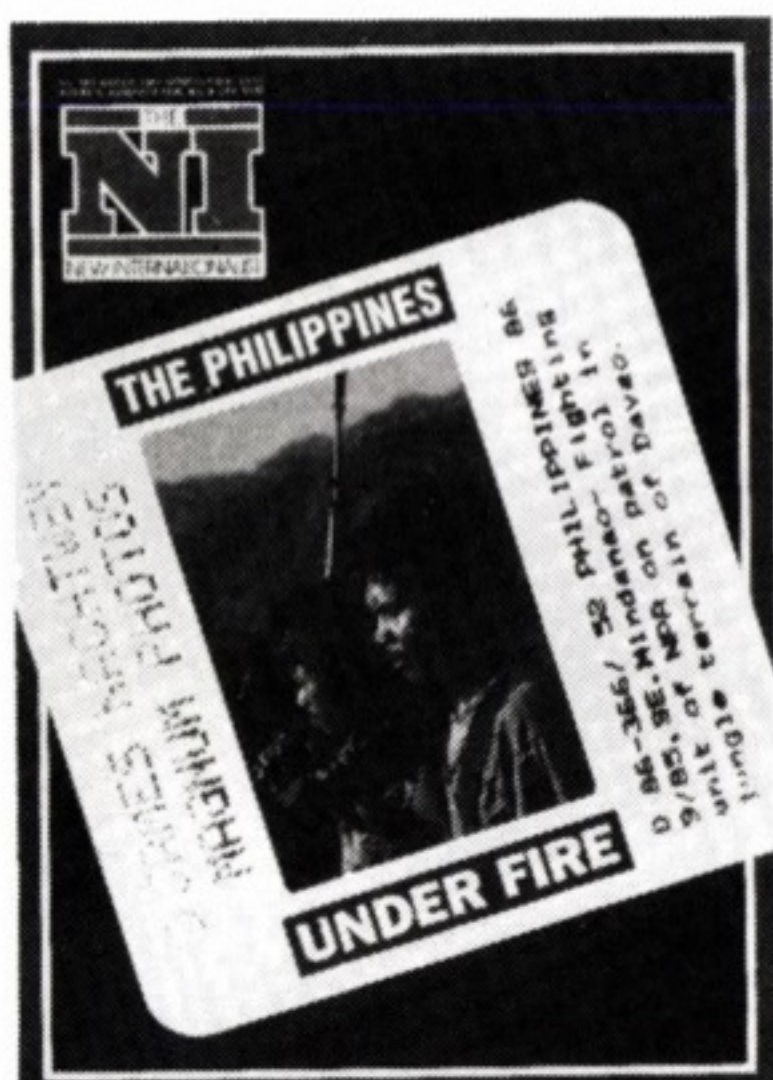


Hot air 10

Are politicians fiddling while Rome burns? We separate rhetoric from reality.

Killing solution

We welcome NI's issue on the Philippines (205) but Peter Stalker's travelogue fails to highlight the devastating effects of militarization, which is a major obstacle to development. Last year 35,000 people



were uprooted on the sugar island of Negros. Human Rights organizations place the numbers of 'internal refugees' at 300,000 for 1989 alone, and some believe that they number more than a million. Many die in overcrowded, makeshift evacuation centres controlled by the military. Most victims are children. President Aquino has admitted that the forced evacuation of people from their villages is part of the government's 'total war' against communist insurgents. Most alarming about this strategy is its impact on grassroots initiatives, many of which have been disrupted by military operations while relief workers have been branded as 'communist' and killed.

Alice Donald
Philippine Resource Centre,
London, UK

Raincoat boycott

Five months into the lock-out of 1,000 young women workers at the British-owned rainwear factory, Intercontinental Garment Manufacturing Corporation in the Philippines (*The Philippines* NI 205), many are still camped outside the factory, sleeping under cardboard, without electricity and water. Harassment continues. The company, owned by



welcomes your letters. But please keep them short. They may be edited for purposes of space or clarity. Include a home telephone number if possible and send your letters to the nearest editorial office. The address is inside the front cover.

British garment giant William Baird, is refusing to implement a nationally agreed 70 pence (\$1.20) daily wage increase and to pay back wages owing from July to September 1989 when the factory closed down. The union has called for an international boycott of raincoats and jackets made by Baird for subcontractors in the Philippines under the labels Telemac and Canda (C&A), sold in most British high street stores.

Linda Shaw
Women Working Worldwide
and Philippines Support Group
Trade Union Committee,
London, UK.

Popularity problem

In response to Mrs A H Morley (*Letters* NI 204), homosexuality is produced by exactly the same things that produce heterosexuality. Also Mrs H asks whether homosexuality is becoming more 'popular'. But homosexuality is not some brand of fizzy drink; popularity is not the right word. Anyway it is difficult to tell whether or not the incidence of homosexuality is increasing; there may just be more surveys nowadays. And now my own question: why is homosexuality a 'problem' Mrs H?

Steve Watson
Brighton, UK

Liberating anger

Please stop insulting your disabled readers (me included). You had the temerity to give the film 'My Left

Foot' (*Reviews* NI 204) four stars for political merit despite the fact that - as the review acknowledged - the Disability Liberation Movement had condemned it for using an able-bodied actor. How dare you!

Merry Cross
London, UK

Ancient name

I am an Aotearoan pakeha (non-maori) and I think Aotearoa is the correct name for New Zealand (*Letters* NI 203). I also find Frank Hall's reference to 'that stupid name' offensive. He says that the whole world knows Aotearoa as New Zealand, but as an Aotearoan travelling the world, I have found that many Americans, Europeans and Africans confuse New Zealand with New Guinea or Zealand in Denmark. Moreover a large proportion of Aotearoans support the use of the original name, Aotearoa, rather than the English name, New Zealand, which is only a couple of hundred years old.

Owen Gale
Windsor Gardens, Australia

Wish-washing

I very much enjoyed your issue on buying green (*Green Consumer* NI 203), but oh for the opportunity. One's priorities assume a different shape when - like me - you live in a city where flour and sugar disappear from the shops for months at a time and you can never be sure of finding milk, cooking oil or margarine. As

for washing powder, Brand A turns all my whites grey, Brand B bleaches all my coloureds and Brand C leaves everything in more or less the same condition as when I started. I have no idea which is the most ecologically sound!

Elizabeth Corrie
Lima, Peru

Harmony discord

Sue Robson's piece on China's *Harmony in abundance* (NI 203) must rank as one of the silliest articles yet published in NI. The destruction of most of the forests and much of the wildlife in ancient China is well documented. And the Maoist regime virtually finished the job by draining the ponds, lakes and wetlands. China's forest cover has dropped by 30 per cent since 1949. In Hubei province - 'Kingdom of a Thousand Lakes' - around 80 per cent of the lakes have disappeared. Deserts are on the march. The annual loss of topsoil is estimated at over five billion tons. And rainfall in southern China is even more acidic than in Eastern Europe. All of these problems can only be worsened by China's already over-large population. This hardly makes the Chinese 'the world's ultimate green consumers'!

Sandy Irvine
Newcastle-upon-Tyne, UK

Mother's love

I come from a small, rural community where it is very difficult to talk about homosexuality (NI 201) and I very much appreciate NI's special edition on the subject. The information is especially important to me as a mother who is trying to raise her daughters to accept and respect others.

Ruby Reske-Naurock
Sherwood Park, Canada

Goering and gays

You certainly are getting on the 'Nazi Victim Bandwagon' (*Homosexuality* NI 201). Male homosexuality was outlawed in Germany, but this was not Hitler's invention; it was outlawed even in the very democratic



Weimar Republic. When this originally became law I don't know. There were many inmates of the Nazi concentration camps who were classified as 'homosexuals' with a pink triangle, although many of them were not really homosexuals, but Catholic priests and other politically undesirable elements (from the Nazi point of view).

It was easy to pin the homosexual label on these people. They were certainly mistreated and not many survived. But your portrayal of Nazi Germany as opposing homosexuality is wrong. Some of the Nazi leaders were known homosexuals. It was estimated that during the 1930s Germany had about

two million homosexual men, many of them in high positions in the Third Reich.

Harvey P Newton
(Buchenwald prisoner
No 28418)
Miami, US

Explaining God

The Bible does not condemn homosexuality (NI 201), only the homosexual act. God loves all people irrespective of their race, sex or sexual orientation but abominates sin however great or small. Christians must love homosexuals while deploring homosexual practice; there is no sin in loving someone of the same sex.

J Herber
Bath, UK

Fantastic feet

In societies forever diminished by traffic tragedies and choked by engine fumes, let us reconsider the simple possibilities of human feet (*Car Chaos* NI 195). These moving parts by which we pivot on the earth are dependable for travelling moderate distances and provide the obvious, clean alternatives to noxious car travel. Our greatest founders conducted themselves by walking. Jesus ministered in sandals through Galilee and Judea; Gotama sought disciples from place to place afoot and Socrates founded a peripatetic school. Most First World citizens have participated in a tragic cycle of smog production that now makes it

unpalatable to walk outside. But members of industrial societies must take time to walk – or lose the biosphere.

Roland Teape
Beausejour, Canada

Thanks

We would like to acknowledge that four questions from the Green quiz in the Green Consumerism issue were based on material from Karen Christen's book *Home Ecology*, London: Arlington, 1989 and Denver: Fulcrum, 1990 and the *Telegraph Magazine*. We are sorry that there was no acknowledgment.



The views expressed on the letters pages are not necessarily those of the NI.

LETTER FROM LA PAZ

Mother tongue, fatherland

Susanna Rance explains why many Bolivians feel like strangers in their own country.

WHY do some children have mummies and daddies who speak the same language? mused Amaru one day when I went to pick him up from a friend's house. It seemed a natural question for a three-year-old who has spent most of his short life speaking English with me and Spanish with his father. The two languages and cultures are constantly interspersed in my children's lives, though both offspring insist that England is their country and mark their identity by speaking Bolivian with an English accent.

Being bilingual is no rarity in Bolivia. Over half the population speaks a native tongue as well as Spanish, the official language. It is not uncommon for Bolivians to speak even three languages if they live in areas where one ethnic group borders on the territory of another, or if they migrate to another part of the country. Amaru's godmother Angelica, for example, is fluent in Quechua, Aymara and Spanish. But her introduction to the 'official' language was far from easy.

'I was born in the mining town of Potosi, and we spoke Quechua at home. When I was six, my family moved to the Yungas valleys where the people are mainly Aymara. That was where I started school. Our teacher spoke only Spanish and he used to get out a leather belt to threaten us if we whispered together in our own languages. "Just watch it ... the next one of you I catch will get this", he would say.

'It was a very tense situation. I didn't understand a word. It was still the system of rote-learning in those days. They made us repeat and copy things down, and bit by bit, I picked up Spanish. I learned Aymara too, through friends and work – so now I use three languages.'

None of Angelica's three boys speak an indigenous tongue, though she would like them to. They have little practical need for it in their daily lives. They can speak to their relatives in Spanish, so why learn Aymara or Quechua? Schooling, books, popular music, TV, cinemas, public functions and formal life all make Spanish essential for integration in the city.

Those who speak no Spanish at all live in closed ethnic communities of Quechuas, Aymaras, Guaranies or one of some 40 other lowland

tribes, each with their own language. It is more common for women to speak only one language; monolingualism is associated with isolation, poverty and lack of education and has come to be taken as a mark of 'backwardness'. The children of such women are more likely to be malnourished and die young than those of Spanish speakers.

Many women in La Paz were brought up speaking only a native language but most now speak Spanish too. The mother tongue is often abandoned by the next generation who drop Aymara and Quechua to 'get educated' and join the urban, Spanish-speaking world. Indigenous cultures are stronger in Bolivia than in many other Latin American countries but still the tendency among the growing ranks of city-dwellers is to leave their ethnic roots behind in their rural communities.

One friend of mine, 45-year-old Bertha Quispe, has never been inside a school. She learned Spanish when she was growing up by playing with other kids. Only one of her children, Estefania, is fluent in Bertha's native Aymara language – and she is the least educated of the children. 'Estefania went to primary school for two years but her aunt said to me: "A girl! What does she need education for? Just to write letters to her boyfriend? All she needs is to be able to sign her name." So Estefania left school and went to live with her aunt as an apprentice *pollera* maker (*polleras* are the thick white skirts worn by indigenous women).

'As for my other daughter, Maria Eugenia,' says Bertha, 'She finished secondary school, but she can hardly speak any Aymara. She doesn't want to learn. She says it's a twisted sort of language, she can't get her tongue around it. When my husband and I argue in Aymara, she complains because she can't understand what we're saying. I have to explain to her in Spanish.'

Bolivians from the countryside get treated like foreigners in their own land when they come into town. The nearer the city they get, the fewer people understand their language. They have to struggle with Spanish and get pushed aside for being 'ignorant' of city ways.

My kids, on the other hand, constantly get praised for speaking English as well as Spanish. Teachers get them to 'perform', schoolmates ask for help with homework, taxi drivers, shopkeepers and passers-by stop to listen to them, encourage them and tell them how useful it is to be bilingual in the colonizer's tongue which has now become 'universal'. Meanwhile Bolivia's original languages are relegated to an inferior status. People take little pride in being bilingual in a land where indigenous cultures predominate numerically – but Spanish rules.

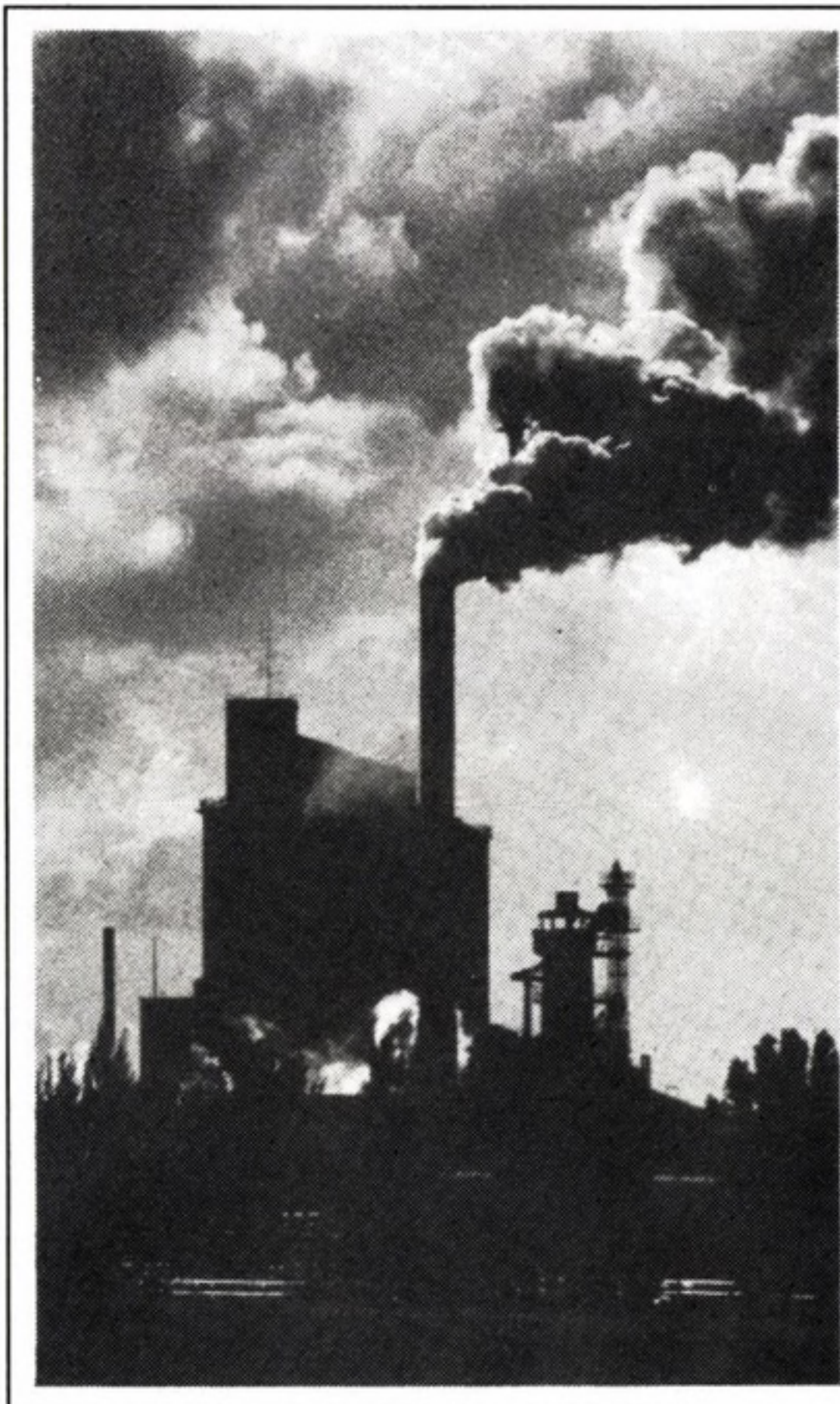
Susanna Rance is a writer and researcher who has lived in Bolivia for several years.



Wayne Ellwood searches
for a way out of the
greenhouse.

GLOBAL WARMING

HOW TO TURN DOWN THE HEAT



WHEN the Americans decided to send a man to the moon they searched tirelessly for a location that could duplicate the barren, lifeless topography they imagined made up the lunar surface. In the end they decided on Sudbury, Ontario: a small, friendly city anchored in the uncompromising granite of the Canadian Shield, a few hundred miles north of the US border.

Sudbury is a 'hardrock town', a mining community perched atop a honeycomb of shafts from which the International Nickel Company (INCO) has dragged thousands of tons of nickel ore over the past 50 years. INCO built the town, but it also destroyed the local environment. The hills all around are stripped of the original coniferous forest; the land is blasted and forlorn, pock-marked with settling pools and scarred by slag heaps, the result of decades of deadly chemicals being pumped into the air from company smokestacks.

When outrage over acid rain – not to mention the effect of Inco's pollution on the health of local residents – began to hit home more than a decade ago, the company reacted by building a 'superstack', a monumental chimney which towers over the town. The superstack was offered as a solution. But it was a typically self-interested and short-sighted one. It did help clear the local air, but only at the expense of the thick forest and isolated communities several hundred miles to the northeast. Out of sight, out of mind.

Sudbury is an extreme but not unusual

example of industrial society's disregard for the natural environment. The reality is that you can find dozens of Sudburys around the world. From Teplice in eastern Czechoslovakia to Palembang in south Sumatra, scores of other INCOs have used the atmosphere as a dumping ground for toxic discharges.

Over the past 200 years we have operated under the assumption that the environment is infinitely forgiving: the seas are deep enough, the sky big enough and the soil resilient enough to absorb whatever toxic garbage we produce.

No longer. The last half of the 1980s changed all that; suddenly people were frightened that damage to the global environment was spinning out of control. A

number of startling revelations set that fear in motion. The most shocking was scientific confirmation that human-made chemicals (chlorofluorocarbons or CFCs) had torn a hole the size of the US in the ozone layer over the Antarctic. When the ozone layer is damaged more ultraviolet radiation reaches the earth's surface, boosting skin cancers and potentially disrupting the food chain.

There were other signals. Coincidentally, one of the clearest took place in the summer of 1988 just a three-hour drive south of Sudbury. What started as a routine international meeting of 300 scientists, government officials, climatologists and activists in Toronto turned into an urgent call for action on the threat of global warming and climate change.

'Humanity is conducting an unintended, uncontrolled, globally pervasive experiment whose ultimate consequences could be second only to global nuclear war,' said the conference summary statement. 'Far-reaching impacts will be caused by global warming... as a result of the continued growth in atmospheric concentrations of carbon dioxide and other greenhouse gases. The best predictions available indicate potentially severe economic and social dislocation for present and future generations, which will worsen international tensions and increase risk of conflicts between and within nations. It is imperative to act now.'

Living in North America that summer it was difficult not to be convinced. The



Young Bangladeshi girls flee their storm-damaged homes. Rising sea levels may cause widespread flooding of coastal lowlands.

Photo : Badal/Oxfam

heat was unrelenting from early June to late September; the centre of the continent baked, crops shrivelled, forest fires raged, fresh-water supplies dwindled and both Canadian and US grain harvests were well below average. A portent of the future, said climatologists: the 'greenhouse effect' was no longer science fiction.

Despite the Toronto conference's sobering message few people yet understood the full implications of global warming. And fewer still were asking the tough questions about how to stop it. Those who did were often dismissed as wailing Cassandras or gloomy pessimists. That's because global warming is caused by nothing less than our whole way of life; as such it is a radical challenge to three centuries of conventional wisdom about the necessity for economic growth.

But we're getting ahead of ourselves here. Let's backtrack for a moment and try to get a grip on some of the basic concepts. (If this is familiar territory jump down a few paragraphs.) The greenhouse effect is not a new phenomenon. Scientists have known for centuries that a layer of gases naturally surrounds the earth like an insulating blanket, trapping the reflected energy of the sun and preventing it from escaping into space. That is what makes the earth warm enough for people, plants and animals. However, recent human activity has boosted concentrations of greenhouse gases and enhanced their heat-trapping ability. The main culprit is carbon dioxide (CO₂), which scientists estimate accounts for nearly half of global warming. CO₂ is released from burning fossil fuels (coal, oil and gas) and from clearing and burning forests.

There are other important greenhouse gases too and they cannot be ignored – CFCs for example may account for 25 per

cent of global warming in the next century if their production is not scaled back. But carbon dioxide is the pivotal one. The UN International Panel on Climatic Change now says that CO₂ levels could double within 40 years if present rates of fossil-fuel burning and deforestation continue. That could mean an average temperature increase of between two and four degrees centigrade and a sea-level rise of perhaps a foot by 2050.

No-one knows for certain how local weather will change as a result of this warming. But one thing is clear – it will be no picnic. Indications are that the earth will be warmer than at any time since the start of the last ice age nearly 100,000 years ago. But there's one major difference. This temperature increase will take place not over thousands of years, but over decades. And it is the speed of the change which makes the precise impact so difficult to predict.

The most sophisticated computerized climate models, in the US and Britain, agree that weather around the world will become more erratic and more extreme. In general, temperatures will rise more towards the poles than at the equator. Overall rainfall will also increase as higher temperatures boost evaporation from the seas. But the distribution of precipitation will shift. Some areas will become wetter, others will be drier. In middle latitudes, climate zones will march polewards. Saskatchewan may become like Kansas, southern England like southern France. In tropical and sub-tropical parts of the Third World warming will be less but the impact on a relatively stable climate will be greater. Tropical storms and droughts could both increase. The pattern of the monsoons may shift.

Global warming will also cause ocean

levels to rise – though not, as popular wisdom has it, due to the Antarctic ice cap melting. If this catastrophe occurs it will not be for at least another century. Instead sea levels will rise simply because water expands as it warms. People living in low-lying coastal regions from New York and London to Jakarta and Dacca will be in danger. The world's great river deltas, home to millions in Asia and Latin America and containing some of the Third World's richest food-growing land, could become brackish graveyards.²

But there are also hidden factors which scientists call 'feedback mechanisms'. No-one knows quite how they will interact with the changing climate. Here's one example: plants and animals adapt to climate change over centuries. At the current estimate of half a degree centigrade of warming per decade, vegetation may not keep up. Climatologist James Hansen of the US space agency NASA predicts climate zones will shift toward the poles by 50 to 75 kilometres a year – faster than trees can naturally migrate. Species that find themselves in an unfamiliar environment will die. The 1,000-kilometre-wide strip of coniferous forest running through Canada, the USSR and Scandinavia could be cut by half, setting in motion a chain reaction. Millions of dying and diseased trees would soon lead to massive forest fires, releasing tons of CO₂ and further boosting global warming.³

There are dozens of other possible 'feedback mechanisms'. Higher temperatures will fuel condensation and increase cloudiness, which may actually damp down global warming. Others, like the 'albedo' effect, will do the opposite. The 'albedo effect' is the amount of solar energy reflected by the earth's surface. As northern ice and snow melts and the dark-

er sea and land pokes through, more heat will be absorbed, adding inexorably to the global temperature increase.

Scientists continue to tinker away with their computer models, but the bare-bones facts are clear. Even if we were to magically stop all greenhouse-gas emissions tomorrow the impact on global climate would continue for decades.

Delay, any delay, will simply make the problem worse. Yet delay, like denial, is an all-too-human trait. The fact is that some of us are doing quite well the way things are. We in the developed world have built our prosperity on 150 years of cheap fossil fuels. Oil fires our cars and powers our industry, coal generates our electricity and indirectly runs our TVs, dishwashers and VCRs. Gas heats our water and warms our homes and factories. Our material progress has been linked to energy consumption. Today 75 per cent of all the world's energy is consumed by a quarter of the world's population.⁴ The average rich-world resident adds about 3.2 tons of CO₂ yearly to the atmosphere, more than four times the level added by each Third World citizen.

There is a large dollop of self-interest involved in maintaining the status quo. That is almost certainly the reason why powerful nations (and big carbon-dioxide emitters) like the US and Britain have been dragging their heels at international negotiations to set CO₂ reduction levels. Yet there is no question the ball is in our court. India, China and Brazil, which make up nearly half the world's population, accounted for barely 15 per cent of global warming during the 1980s, according to the US Environmental Protection Agency. The US, with just seven per cent of the global population, is responsible for 22 per cent.

If we hope to tackle climate change

Worth reading on ... GLOBAL WARMING

This is definitely a literary growth area. There has already been a small library published on global warming; and many more books are in the pipeline. An excellent starting point is *Winds of Change* by John Gribbin and Mick Kelly (Hodder & Stoughton, 1989), a well-written, attractively-illustrated book (lots of colour pictures) written to accompany a TV programme. For a concise (though very American) overview have a look at the Worldwatch Institute's briefing paper *In Defence of the Atmosphere* (Washington, Autumn 1989). US climatologist Stephen Schneider is one of the scientific bright lights in this area. His *Global Warming: Are We Entering the Greenhouse Century?* (Sierra Club Books, San Francisco 1989) is both articulate and thoughtful with some refreshing first-person anecdotes. For a more journalistic treatment try Fred Pearce's lively and engaging *Turning Up the Heat: Our Perilous Future in the Global Greenhouse* (The Bodley Head, London 1989).



Vicious circle: Third World consumers are set to follow in the footsteps of the West.

seriously the first thing we need to accept is that most of the problem results from our energy-dependent and resource-wasteful lifestyle. And since much of the blame is ours, so should much of the obligation for finding solutions. Across-the-board cuts in CO₂ emissions will not make much headway with Third World countries who currently consume 15 or 20 times less energy than we do. Unless we show some willingness to change now Third World nations may simply follow in our wake. And if current growth and consumption trends continue, developing nations will pump out 16.5 billion tons of carbon yearly by 2025 – nearly four times as much as rich countries today.

Yet the Third World has no choice but to boost the living standards of its population. In the short term that may mean increasing per-capita emissions of carbon dioxide. And it may mean that countries like China, who are stuck with obsolete technology, will increase rather than cut CFC production over the next few decades so as to make household refrigeration widely available.

There is also a growing realization that mounting debt is strangling the capacity of Third World nations to halt environmental catastrophe. Money that could be used to develop renewable energy sources or clamp down on local polluters is being siphoned into the pockets of Western bankers. According to the International Development Research Centre there was a net flow of \$50 billion from the Third World to the industrialized North in 1989.⁵

But writing off Third World debt will not on its own be enough to assure that the life-threatening costs of environmental damage are included in future development decisions. Dazzled by Northern lifestyles, the corrupt politicians and local elites who control most developing countries could just as easily start the whole process over again. Slashing Third World debt will help. But tropical rainforests won't be saved, for example, until local grassroots movements create the political space to fight for democratic change, for

land and improved living standards for the poor. Without that giant step towards economic justice it is hard to see how the accelerating destruction of the developing world's environment can be halted.

But there is another step which is equally important: breaking the link between increased energy consumption and improved standards of living. In theory this should be easy since there is already a precedent. Following the OPEC oil-price hikes of the early 1970s most Western countries both lowered energy consumption and increased economic growth. This does not have to be an aberration. Energy analysts like Jose Goldemberg have shown that we don't need to burn more fossil fuels to be better off. Goldemberg and his colleagues found that energy use in developed countries could be cut by at least half with no penalty to living standards.

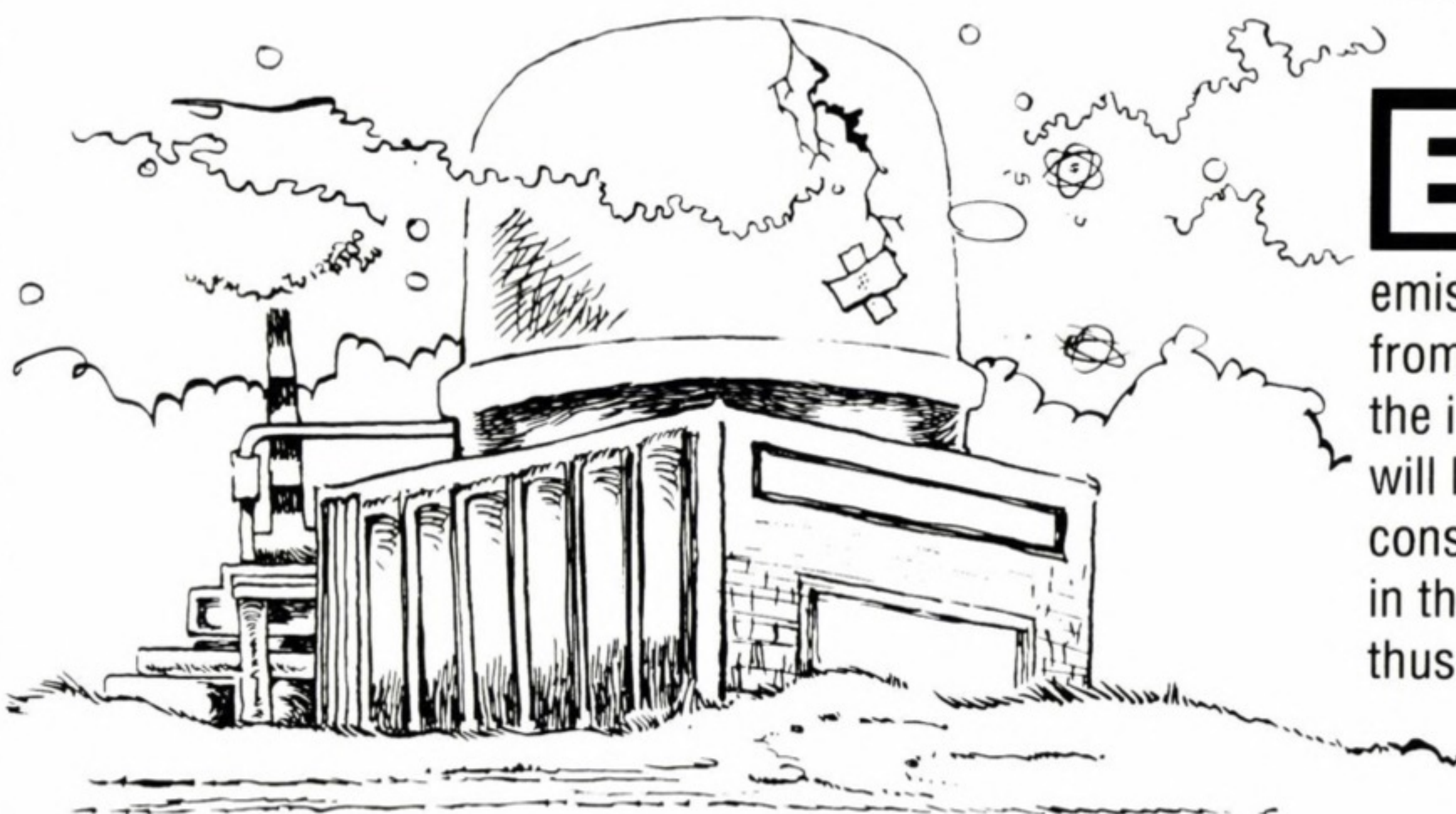
This is a signal that we can stop the avalanche of mindless consumption that is disfiguring the earth. However, first we need to redefine our conventional notions of economic growth. The greenhouse effect is the tragic outcome of opting for growth at all costs, treating the natural environment as both inexhaustible and expendable. Efforts to turn down the heat will mean redefining growth, not freezing it. 'Zero growth' is a utopian cry which would leave current economic inequalities – especially between the West and the Third World – untouched. Instead we should be aiming for 'green growth': growth grounded in social justice which takes account of both the environmental and human costs of development.

Inevitably that will mean forging new relationships with the natural world – and with each other. □

¹ *The Changing Atmosphere: Implications for Global Security*, Conference Statement, 27-30 June 1988. ² *World Climate Programme Impact Studies*, Developing Policies for Responding to Climatic Change (United Nations Environmental Programme and World Meteorological Organization, April 1988); ³ *Turning Up the Heat*, Fred Pearce (The Bodley Head, London 1989); ⁴ *Winds of Change*, John Gribbin and Mick Kelly (Hodder & Stoughton, 1989); ⁵ *Globe and Mail*, 30 December 1989.

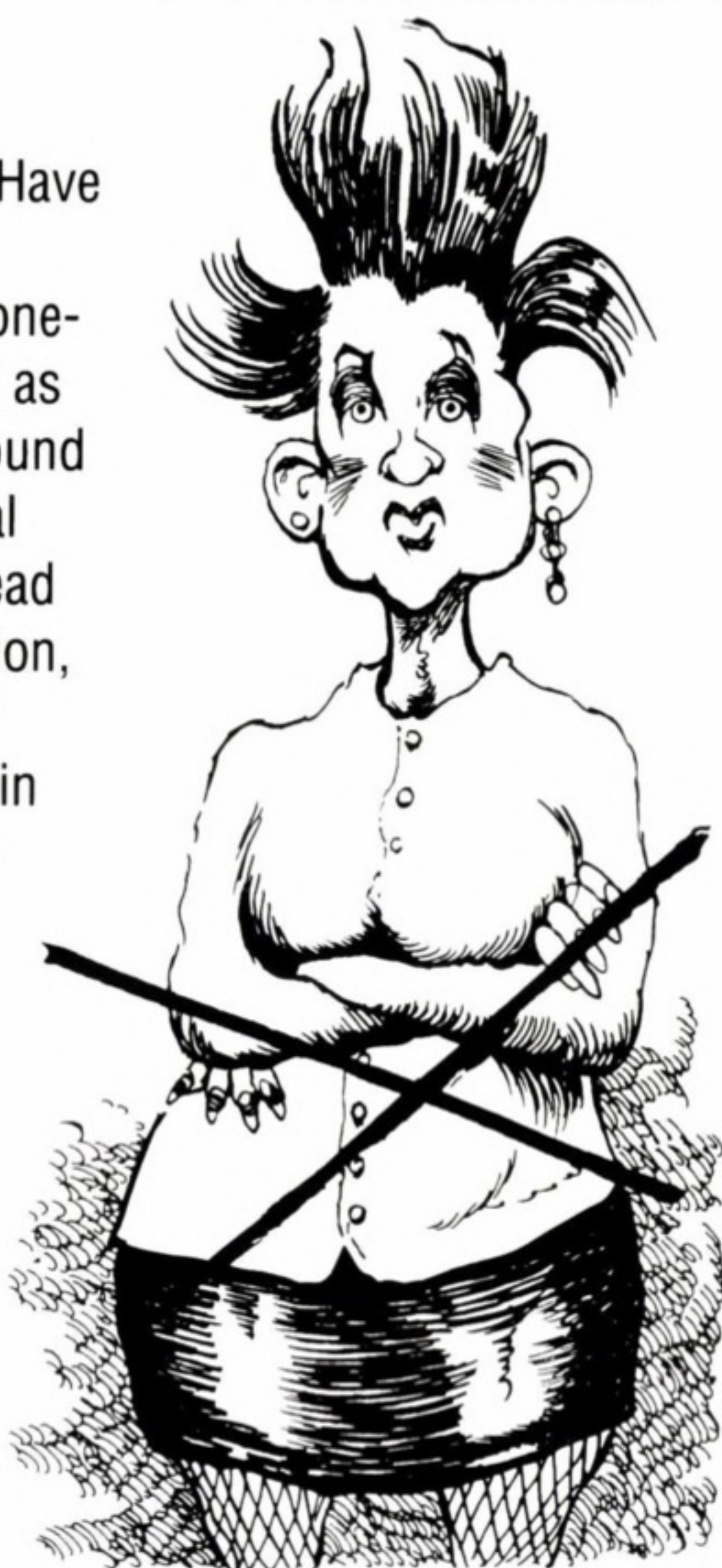
HOW TO COMBAT THE GREENHOUSE EFFECT

TAKE all recent articles, pamphlets, books etc on the Greenhouse Effect and put them in your attic. This is the most effective use of many of these pieces as they will cut down your fuel by making your house warmer. This will reduce your house's emissions of CO₂, the main cause of the Greenhouse Effect.



ENCOURAGE more nuclear power. As well as decreasing CO₂ emissions into the atmosphere from traditional power stations, the inevitable nuclear accidents will lead to loss of life which will, consequently, lead to a decrease in the number of houses – and thus less fuel and thus less CO₂.

A TWO-IN-ONE offer. Have nothing to do with people who use ozone-unfriendly products. As well as being an environmentally sound move, this decrease in social intercourse will eventually lead to a decrease in the population, a decrease in the number of homes and thus a decrease in CO₂ emissions. Simple, eh?



Martyn Ruck



1. Abandon growth

Industrial society treats the natural world as an endless store of resources to be plundered and exploited. Consumerism and economic growth (driven by modern technology) are the twin gods of modern life. Conquering global warming means rethinking our relationship with nature and with each other, learning to love the earth as well as ourselves.

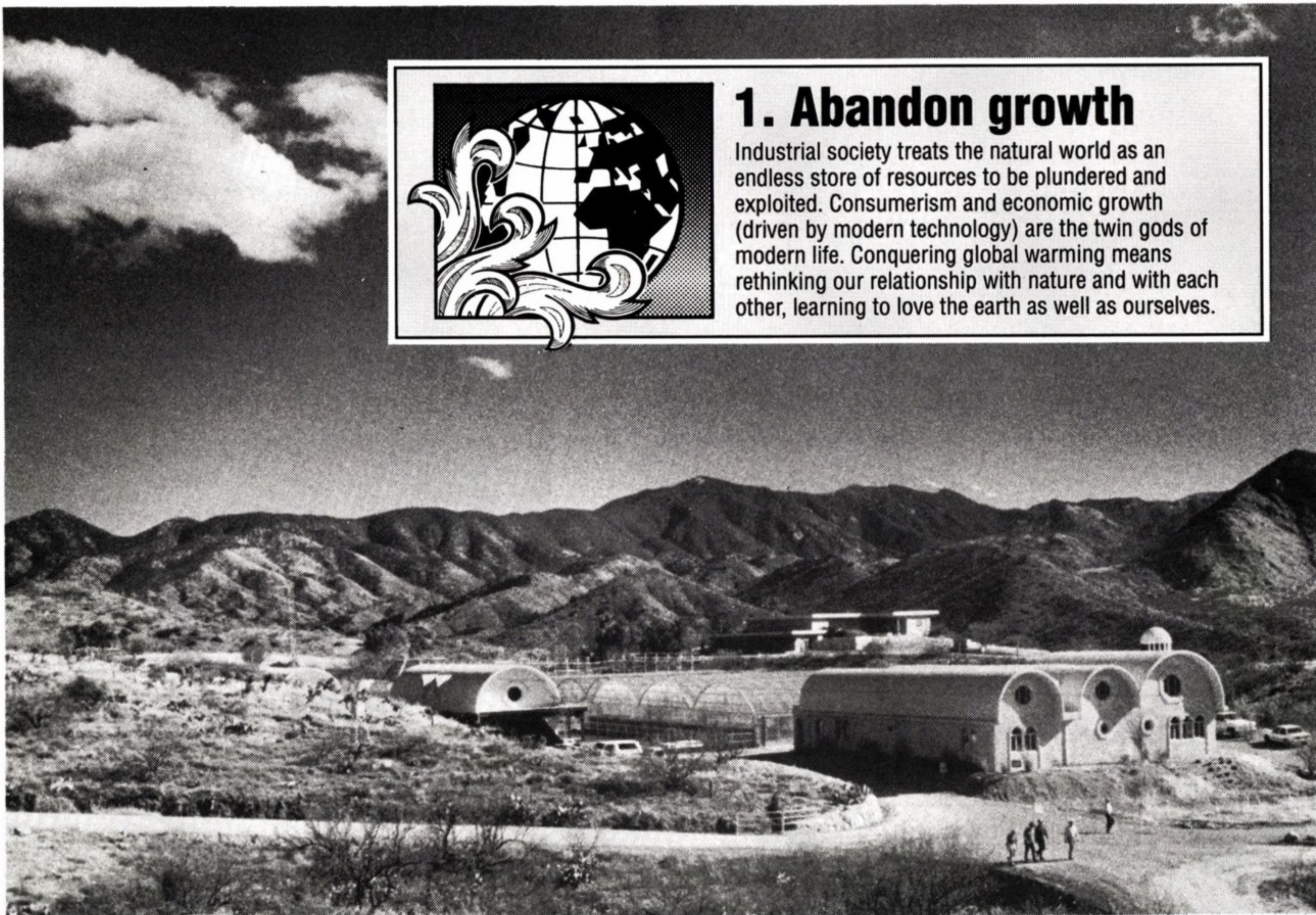


Photo : Arizona Star

The cosmic ark

Jeremiah Creedon heads off to the Arizona desert to probe the Western world's obsession with economic growth. In his quest he discovers new wisdom from old sources.

IN the Arizona desert north of Tucson, at the foot of an arid mountain range, scientists and entrepreneurs are building history's first utopia under glass. Called Biosphere II, the airlocked enclosure is intended to be a self-sustaining ecosystem, a tiny model of the complex biological web that forms Biosphere I – otherwise known as Earth.

The two-acre microcosm contains seven distinct 'biomes', including an ocean 30 feet deep, a rainforest, a savannah, a farm plot and a human village. Crops and small animals will provide food for the eight 'biosphereans' due to be sealed inside the structure for a two-year test beginning this September.

The \$30-million project has been privately financed. The allure for investors is apparently more than a chance to learn something about the environment. One major investor, a Texas oil magnate, expects to see a profit from such systems in the near future when the new pioneers establish permanent space stations and colonies on other planets. This faith in Biosphere II is based on the surety that life on Biosphere I is deteriorating – that

pollution, overcrowding and scarce resources will soon push humans out of the earthly nest.

Last year I made an effort to visit the project. Though it has been widely covered in the press, my own attempts to gain access as an independent journalist were not encouraged. I was going to be in the area anyway, and I resolved to visit the compound unannounced. I had convinced myself that I had to see it.

My interest was less in the project's scientific significance than in what it stood for as a social symbol. Biosphere II seemed to epitomize the advanced expression of a technocratic mentality whose adherents were now turning their energies towards escaping the mess they had made on Earth. Many claimed this experiment would yield profound ecological insights. It may. But beneath the ecological rhetoric I sensed a powerful counter myth, a fantasy of the cosmic ark, with a man who made his fortune selling fossil fuels playing the modern Noah.

Such myths contribute to global warming and other environmental problems in a crucial way. Throughout

Space-age utopia: Biosphere II is a dry run for survival once the earth is destroyed.

history, various peoples have used myth to justify their own values and behavior. Western societies are no exception; they are constantly seeking ways to explain, among other things, their obsession with economic growth. The scenarios for exploring space are only the latest narratives to 'heroicize' a technological world-view. The idea that underlies every such story is both simple and absolute: growth is good. Which happens to be closely related to another, perhaps older, Western conviction that nature is bad.

The tie between these two concepts must be understood before the latest, and thus least visible, rationales for unlimited growth can be seen for what they are. One can easily recognize that felling the wilderness in Europe six centuries ago, in North America two centuries ago, or even in the Amazon Basin today, implies a view of nature based on aggression and fear. It is not so easy to detect these same impulses at work on a project like Biosphere II. But the basic mindset bears many similarities. The belief endures that nature must be literally 'manhandled' into subservience if human society (that is, Western society) is to progress.

The idea that society must progress to survive is one of the ruling principles of Western thought. According to the Marxist anthropologist Stanley Diamond, we 'cannot surrender the notion of

progress without destroying the rationale for ... civilization.' Progress, a euphemism for growth, is how well a society transforms raw resources into consumable goods. The image of a shark comes to mind, a primitive omnivore that can't breathe without moving forward. Western societies are like sharks swimming through time, impelled by the fear that to pause is to die.

The mathematical expression for this dynamic (widely recognized since the Club of Rome's 1970s study, *Limits to Growth*), may be even more disturbing. It is the exponential curve depicting what the world consumes – hurtling upward, ever steeper, toward an apocalyptic collision with a fixed ceiling of resources. If humanity really possesses something like the collective unconscious, the exponential curve may one day rival the mushroom cloud as the era's most profound contribution to the legacy of archetypal symbols.

In the great urban centers, mass anxiety about rampant growth seems to become more palpable year by year. There are moments when the individual, observing the sprawl of a place like Mexico City from the air, can almost feel progress accelerating in the uncontrollable fashion of a nuclear meltdown.

But others maintain these gloomy intuitions are unfounded. Only a few months ago, for instance, an editorial in the *New York Times* looked back at the prediction offered by *Limits to Growth* and declared: 'The Club was right to tell industrial countries they had to pollute less, but it underestimated the power of technology to raise the limits to growth, and the vast flexibility of economic systems to respond to shortages with new sources of supply.' This view is shared by the World Commission on Environment and Development which called for 'a new era of economic growth, one that must be based on policies that sustain and expand the environmental resource base.' The Commission sees 'sustainable' growth as 'absolutely essential to relieve the great poverty' in the Third World.

Such thinking may be pragmatic, even laudable, but it also neatly severs the causal link between global problems like greenhouse warming and the underlying ethos of growth. Pollution is viewed as bad, of course, but growth remains good – in fact growth is championed as the tool through which such problems can be solved. This faith in technology and growth also imposes a future on the developing world that looks quite similar to the industrial world. 'Sustainable growth', for all its virtues, is still the conceit of a ruling economic order seeking to remodel all societies after its own image.

Politicians, journalists, financiers – the custodians of the industrial present – are not the only ones who accept the ideology of progress as an absolute truth. Social scientists base their definition of society

on progress. As a result, modern anthropologists and historians have colonized the past as well, imposing the standard of Western progress on earlier peoples whose visions of the cosmos may actually have been quite different.

In other words, at the very core of a science dedicated to the rational understanding of society, the nineteenth-century positivists implanted a bit of pure speculation – their faith in progress. As John Stuart Mill noted, the European mind had already chosen between two visions of history: as a cyclical 'orbit' or as a linear 'trajectory' in which no event was ever repeated. Mill saw the notions of trajectory and progress as synonymous.² No-one could dissuade the industrial West from envisioning its own destiny as a missile streaking into the future.

The wealth of Western society has created whole classes who spend their lives gleaning insights into nature and the universe. Their achievements are stunning; but so are their misperceptions. Take the theory of evolution, which held the potential to shatter forever the Western idea that humans stood apart from nature. Instead, evolution itself was interpreted as



Destruction seen as wealth – fatal furs.

a progressive program whose final achievements – merging with the godhead or colonizing the universe – would be triggered by an act of human will.

The social Darwinism of the nineteenth century thus never disappeared; it simply became the metaphysical Darwinism of the twentieth. Meanwhile, profound modern problems like exponential growth and global warming can be rationalized as the consequences of a grand plan. According to this design, the species may be multiplying in such great numbers as a way to generate the freak genius in a billion who will take the mission forward another small step. The Earth in turn is but a chunk of raw energy, a propellant that humans will reduce to ash in launching the ultimate voyage to an unspecified Somewhere Else.

Around the time I intended to visit Biosphere II a newspaper in Tucson ran a feature on it. A photograph showed a young woman emerging from a small test

module after 'five days in isolation'. She was wearing the sort of jumpsuit favored by astronauts and waving at a small crowd beyond the camera's frame. The caption said they were applauding. Other articles have mentioned that choosing biosphereans for the longer experiment will be a highly selective process. Only certain people are apparently suited for such confinement. The same could be said of the organisms that an entomologist and 'vertebrate co-ordinator' are planning to select, including a bat colony and 250 species of insects.

My own efforts to reach the cosmic ark were not successful. After driving for hours one day I found myself at the end of a dirt road surrounded by dry hills. I got out of the car. Two ravens swept down from the hills, following the contour of the land. The slopes were covered with a shrublike tree I did not recognize. They were spaced in an equidistant pattern – the arid land was perhaps incapable of supporting them any closer together. I assumed this system of order, the ecological lattice, extended far beyond what I could see. And I suddenly realized that for all my effort I didn't really want to find Biosphere II. I never had.

Biosphere II is one expression from a technocratic people looking for the way out of a profound jam. But the growing numbers who are beginning to listen to the advice of the Earth itself represent another. Once again, the West has arrived by brute strength at the threshold of a choice between different visions. Just as some say that modern physics has come full circle, rediscovering the cosmological wisdom of the Chinese sages, so also has industrial society in general stumbled on a 'new' knowledge of the Earth that until recently they were forcing primitive societies to renounce.

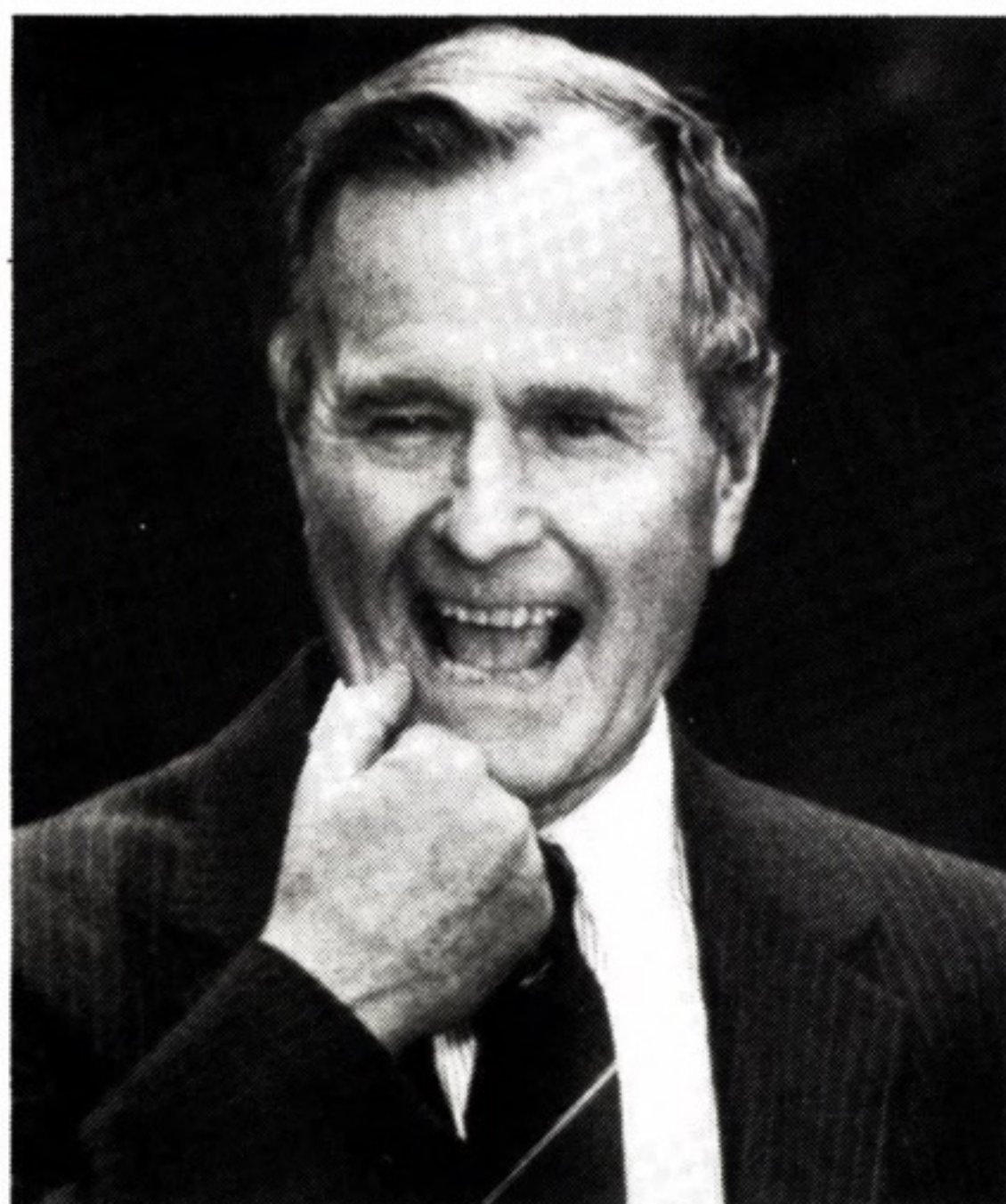
This rediscovered awareness is at once so simple and so radical it is hard to imagine an urban people choosing it. And yet many are. The great value to the emerging dialogue over issues like green politics and 'deep ecology' is that it promises to recover certain ideas that we in the West long ago buried. Some scholars may cringe at the cavalier way that bits of Native American and Taoist thought are combined by the deep ecologists and others. Some claim such eclecticism has no coherence, and maybe in a formal sense it doesn't. But such thinkers, despite their many faults, are in the forefront of a new discipline: an archaeology of lost ideas. And one day the philosophical potshards they are now finding may be pieced together into the real vessel – call it Paradigm II – that will bear us into the future. □

Jeremiah Creedon is an essayist and critic living in Minneapolis.

¹ *In Search of the Primitive: A Critique of Civilization*, Stanley Diamond (Transaction Books, 1974). ² *John Stuart Mill on Politics and Society*, edited by Geraint L. Williams (International Publications Service, 1976).

Hot air!

In the last two years global warming has become a concern of politicians the world over. Countless international conferences have been held and governments everywhere acknowledge the gravity of the problem. Yet few have done anything concrete. In fact their policies often still encourage greenhouse gas emissions. Here we set the rhetoric against the reality.



UNITED STATES

Words

'Those who think we are powerless to do anything about the greenhouse effect forget about the "White House effect"; as President I intend to do something about it ... We will talk about global warming... and we will act.'

— **Presidential candidate George Bush, August 1988**

'We should not wait for all scientific uncertainties to be cleared up before action takes place ... whatever global solutions to global climate change are considered, they should be as specific and cost-effective as they can possibly be.'

— **Secretary of State, James Baker, January 1989**

In March 1989 President Bush called for an international phase-out of chlorofluorocarbons (CFCs) by the year 2000.

Deeds

- The Bush administration has been one of the main impediments to progress in international talks on climate change. Since August 1988 President Bush has announced no less than four times that the US would hold a presidential conference on global warming. There is still no sign of it.

- At the November 1989 global-warming conference in the Netherlands US delegates helped torpedo the final statement so no firm commitments to stabilizing or reducing greenhouse gases were included. Officials cited the need for more research on the problem and the economic consequence of cutting back on carbon-dioxide (CO₂) emissions.

- More recently greenhouse naysayers seem to be gaining credibility with the White House due to a skeptical report by the George C Marshall Institute, a conservative Washington think-tank. On CFCs the Bush administration has neither proposed legislation requiring a total ban by the turn of the century nor backed proposals to accelerate CFC phase-out beyond the 50 per cent reduction required by the 1985 Montreal Protocol.



UNITED KINGDOM

Words

'It is possible that with all these enormous changes (population, agriculture, use of fossil fuels) concentrated into such a short period of time, we have unwittingly begun a massive experiment with the system of the planet itself.'

'We will work to cut down the use of fossil fuels, a cause of both acid rain and the greenhouse effect.'

'No issue will be more contentious than the need to control emissions of carbon dioxide... We can't just do nothing... Each country has to contribute, and those countries who are industrialized must contribute more than those who are not.'

— **all quotes Prime Minister Margaret Thatcher: September 1988; October 1988; November 1989**

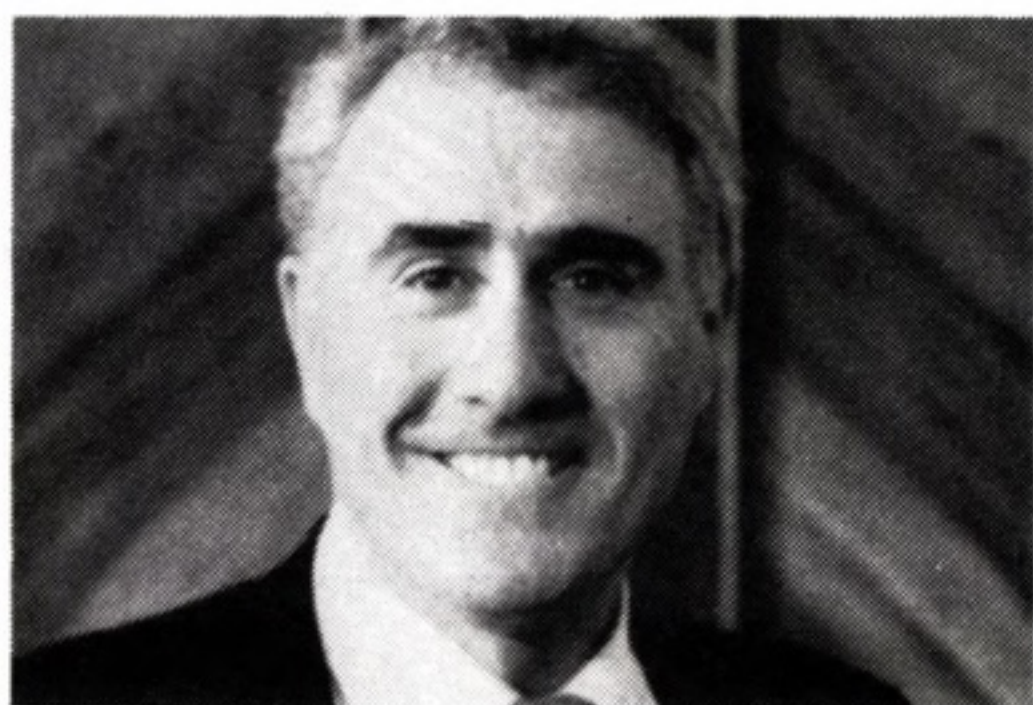
Deeds

- The Government cut its fuel-efficiency budget from £21 million to £15 million in 1989-90, a fraction of the £200 million (\$340 million) nuclear-energy programme. The UK still has no minimum standards or labelling for energy efficiency in electrical appliances.

- At the November 1989 global-warming conference in Holland the UK was a key opponent of the Dutch proposal to stabilize and reduce CO₂ emissions. At a similar UN-sponsored meeting in Washington in February 1990 the UK again dragged its feet on the issue.

- Total road traffic is expected to more than double in the next 35 years and the Government plans a massive road-building scheme to accommodate the increased number of cars. This will cost £5.7 billion pounds (\$9.7 billion) over the next three years. In marked contrast public spending on the railways has been cut by 45% over the last five years.

- Despite an overwhelming scientific consensus, the Department of Energy says a lack of 'firm scientific data' on the greenhouse effect makes it difficult to respond to a problem 'whose scale is yet uncertain'.



AOTEAROA/NEW ZEALAND

Words

'This shows how inept it is for us to work in the international arena to encourage other countries to help halt the depletion of the ozone layer. We must get our own house in order first.'

'In the long term, sustainable development is the only way to live within our means without destroying the environment which gives us life... The greenhouse effect and ozone depletion are two symptoms of the deeper

malaise which we must learn to cure. And we need strong medicine.'

'Emissions from petrol-driven vehicles are a major contributor to the greenhouse effect. It is vital for the health of the environment that people be awakened to the benefits of alternative fuels.'

— **all quotes Prime Minister Geoffrey Palmer, June and July 1989**

Deeds

- Government subsidies for the installation and use of alternative fuels (natural gas and propane which emit 30% less CO₂) have been removed.

- Rail branch lines have been closed, stations shut down and passenger services reduced. Subsidies for public transport in urban areas have also been slashed.

- The Ministry of Energy is being dissolved with some functions transferred to the Ministry of Commerce. Parts of the natural-gas industry have been sold to the private sector and the state-owned Coal Corporation is also for sale. Increased energy use is being promoted.

SOVIET UNION

Words

'We are ready to discontinue our production of CFCs by the year 2000. This year two more of our factories are transferring to ozone-safe technologies ... Time is pressing and if we miss the chance at present, it will be catastrophically late tomorrow...'

— **Foreign Minister Eduard Shevardnadze, November 1989**

In January 1990, Soviet President Mikhail Gorbachev called

for international monitoring and control of the environment and backed suggestions for a 'Green Cross' — an international agency to respond to ecological disasters.

Deeds

- At the 72-nation global-warming conference in the Netherlands in November 1989, the Soviet Union joined the US, Japan and Britain in blocking a key proposal to stabilize CO₂ emissions by the turn of the century.

- A failure to invest in new capital equipment means that Soviet industry is notoriously inefficient in its energy use with a consequent increase in greenhouse-gas emissions.

- Soviet agriculture, especially on the vast state farms, depends on massive applications of chemical fertilizers, pesticides and herbicides. Nitrogen fertilizers are destroying fragile farmlands and sending tons of nitrogen-oxide gases into the air. Hundreds of square miles of land near the Aral Sea have been turned to desert. And the Aral itself, once one of the world's largest inland bodies of water, has shrunk to a quarter of its normal size.



CANADA

Words

In no area is the link between our economic activity and environmental disruption more evident or more troubling than in the area of energy policy. Canada is committed to applying the principles of sustainable development to our energy future.'

Sustainable development requires the full co-operation of the entire international community. CO₂ emissions in my country and the destruction of the Amazon are two sides of the same coin.'

While international co-operation is crucial, environmental protection begins at home. That is why the Canadian government is fundamentally re-examining its approach to the environment.'

— **all quotes Prime Minister Brian Mulroney: June 1988; October 1989; November 1989**

Deeds

- The Government has slashed funding for energy efficiency and alternative-energy projects from \$400 million in 1984 to \$32 million today.

- The budget of Environment Canada, the government branch charged with looking after the environment, has been cut by \$34 million while more than \$5 billion in federal funds has been committed to petroleum mega-projects across the country. One project alone (the OSLO oil sands) would put 220 megatonnes of carbon into the atmosphere, more than twice the country's 1985 carbon emissions.

- The Government recently gutted commuter rail services and shut down a major portion of the passenger rail service across the country, thus making more people dependent on travel by car and inevitably increasing CO₂ emissions.



AUSTRALIA

Words

'Australia has taken a lead on CFCs and halons by promising to reduce their production by 95 per cent by 1994... We're already acting. We're not copping out on anything.'

— **Environment Minister Graham Richardson**

'The problem is that by the time the jury returns its verdict the damage to the planet may be irreversible... the time to act is now.'

— **Foreign Affairs Minister Gareth Evans**

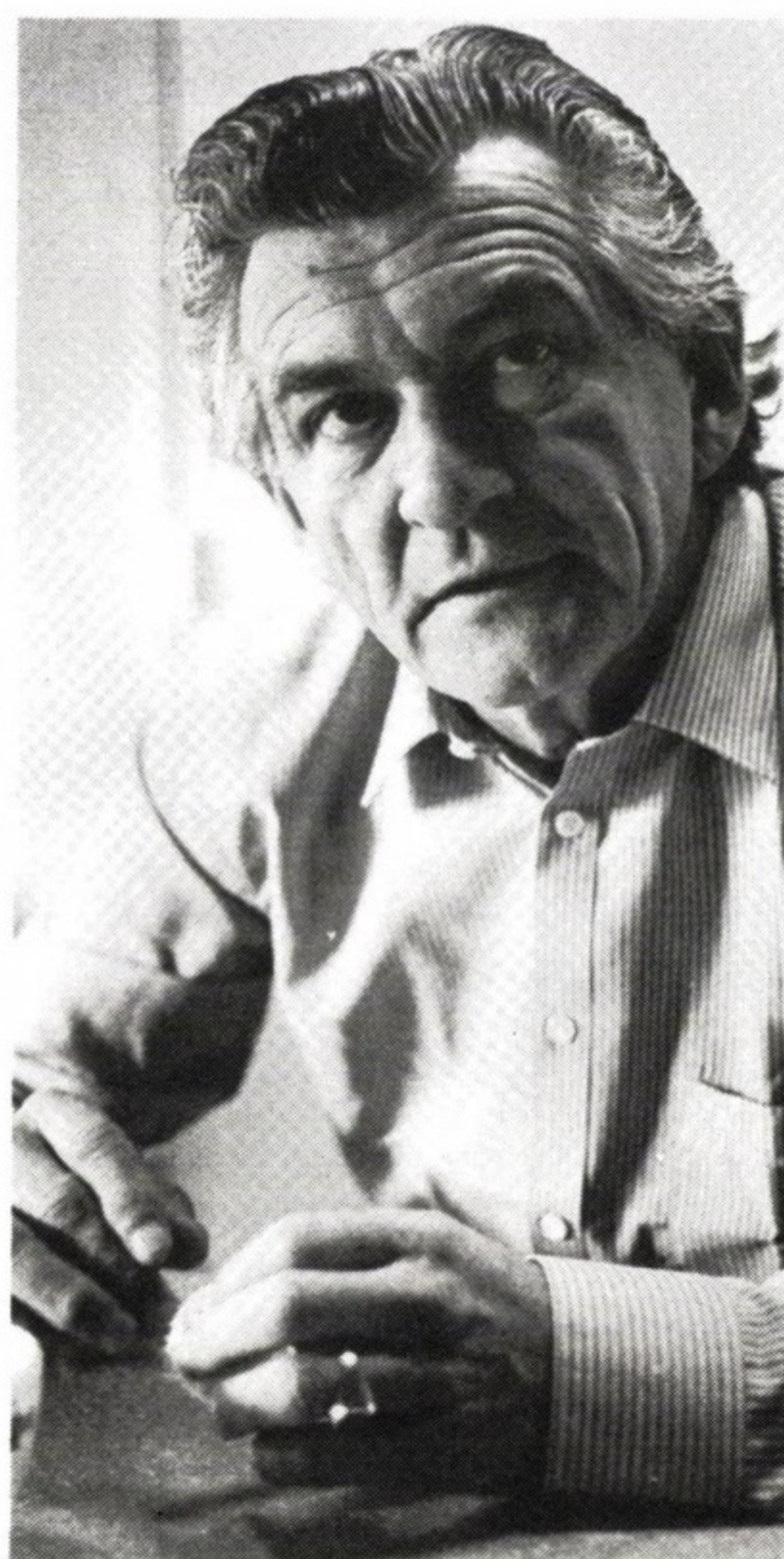
'There is no need to panic or over-react to the greenhouse issue. We must keep rebutting the simplistic and often self-interested assertions of those who blame coal as the main cause of the problem.'

— **Federal Resources Minister Peter Cook**

Deeds

- The Government has not yet acted to reduce CFCs or other greenhouse gases; no standards or timetables have been set. Its first response has been to call for a co-ordinated international effort to see whether major climate changes are actually taking place.

- Coal (at 49 per cent of the total) is the major source of CO₂ from fossil-fuel combustion in Australia. The Government hopes to boost coal exports in the future — the industry is seen as an important source of foreign exchange. And no efforts have been made to reduce local consumption.



CHINA

Words

'China has a very important reason to be concerned about the ozone layer — there are 1.1 billion Chinese so if the ozone layer breaks down, the one-fifth of the world's population that is Chinese will suffer most.'

— **Zhang Chongxian, National Environmental Protection Agency, March 1989**

Deeds

- China has refused to sign the Montreal Accord agreeing to cut CFC output by half within a decade. The accord has been ratified by more than 30 countries.

- China's CFC production jumped 20 per cent yearly through the 1980s. If this growth continues the country will be the world's largest CFC producer within a decade.

- In June, 1989 the Government approved a Ministry of Energy blueprint which outlined plans to increase coal consumption by 400 per cent by the year 2,000 in a drive to boost per-capita income. China already relies on coal (the most potent CO₂-producing fossil fuel) to meet 70 per cent of its energy needs. Chinese coal makes up 50 per cent of world reserves.





2. Cut fossil fuels

Carbon, in the form of CO₂ released from the combustion of fossil fuels (oil, coal and gas), is responsible for nearly 40 per cent of global warming. Coming to grips with the greenhouse effect will mean drastically reducing our dependence on these fossil fuels and fundamentally changing the world's energy system.



Photo : Chicago Tribune

Empires of black gold

They're into coal. They're into chemicals. Once they even bought up the rights to solar power. But their lifeblood is oil. Dick Russell examines the handful of corporations that benefit from our addiction to fossil fuels.

EVER since the era of John D Rockefeller, Thomas Edison and Henry Ford, the global economy has been based on petroleum, electricity and automobiles. The transnational corporations that eventually arose from those men's innovations today produce or market about half of the world's oil, coal and natural gas. Nearly 90 per cent of the world's energy is generated from these fossil fuels – and reserves are plentiful.

Equally plentiful, as population and economic output grows, is the carbon dioxide (CO₂) emitted from their combustion. In 1988, emissions rose 3.7 per cent – the largest increase in nearly a decade. As a result over 22 billion tons of 'greenhouse gases' seeped into the atmosphere.

In the US, which accounts for one-fourth of the world's CO₂ output, a mere glance at the latest 'Fortune 500' listing of the most profitable corporations reveals the obstacles involved in stabilizing, let alone reducing, these damaging emissions. Of the top 14 companies, 12 owe

their livelihoods to fossil fuels. Eight of these, led by Exxon with over \$7 billion in 1990 sales, are directly involved in the global petroleum industry.

'The modern oil corporation, with assets greater than those of most countries, has functioned as a private government in its global planning and controls,' says Robert Engler, author of *The Politics of Oil*. 'It has maintained basic surveillance over all energy development... It polices alternative sources of energy to make sure "competing" fuels are made available to the consumer only with its approval and participation.' And it has also been supported at every step by government intervention, in the form of subsidies, tax dodges and tariff protection.

Nor are the tentacles of Exxon, Texaco and Shell confined to North America and Europe. 'American companies are spreading out even farther across the globe in search of new reserves and customers,' according to *Fortune Magazine*. Although US domestic oil production saw its

biggest single-year decline ever in 1989, a long-standing arrangement with Arab OPEC nations finds Western transnationals profiting handsomely from their role as refiners and marketers.

The oil giants have also had strong support from government. Once a Texas oil baron himself, George Bush played a key role in derailing federal efforts to reduce US dependence on fossil fuels. He was chair of Ronald Reagan's Task Force on Regulatory Relief which repealed energy standards for buildings, and continually scaled back fuel-efficiency requirements for automobiles – efforts which could have saved billions of barrels of oil.

Despite his campaign promise to be 'the environmental president', George Bush has continued to waffle on the global-warming threat. At Bush's right hand today is White House Chief of Staff John Sununu. 'He's the guy who weakened the Administration's position on the Clean Air Act, under pressure from the oil and auto industries,' says Edwin Rothschild, energy co-ordinator for the Citizen Action Organization. 'And he stopped the White House from moving on global warming, because he doesn't believe in it.'

It is not surprising either that the US Congress has been reluctant to endorse accelerated development of non-gasoline-burning vehicles. The largest lobby in Washington is the American Petroleum Institute, with over 500 employees. It spent \$50 million in 1988 to get its point across. A study by the Citizen/Labor Energy Coalition found that oil and gas interests contributed over \$4.3 million to congressional candidates in 1982.

While oil companies continued to receive massive government subsidies during the Reagan years (\$8.5 billion in 1984, for example), research-and-development money for alternative energy sources has plunged 82 per cent since 1980. Tax credits for both solar and wind power were eliminated altogether. David Goldstein of the Natural Resources Defense Council is blunt: 'There's a lot of talk about the importance of the greenhouse effect and acid rain. But when it comes down to a decision being made, not one penny is being spent to avoid these kinds of impacts.'

During the 1970s 'energy crisis' the oil conglomerates quickly moved in to take control of the solar field. By 1982, a report by the Small Business Administration noted that three firms controlled 79 per cent of the market for photovoltaic cells. All were either wholly or partly owned by oil companies. When cheaper imported oil returned they began to unload their subsidiaries. Exxon, Mobil, and Shell had all eliminated their solar assets by 1987. Most recently ARCO (while leading the charge to open up the Arctic National Wildlife Refuge to oil drilling) sold its solar branch to a West German company. As things stand, renewable-energy plants in operation or sched-

uled for completion by 1992 will produce only about one per cent of US electricity.

While the Federal budget for solar energy stands at only \$32 million, the Bush Administration has simultaneously announced a \$5 billion joint venture to develop cleaner, more efficient coal-burning technology. Coal is the dirtiest CO₂-producing fuel. 'Now that it's being heavily subsidized, the oil companies are beginning to move into coal,' says Gary Starr, President of the California-based Solar Electric company. 'What would happen if they spent \$5 billion on a solar-electric demonstration plant instead?'

Combatting the entrenched power of the transnationals will doubtless be the strongest challenge in the fight for a habitable planet. Over the past decade, the largest companies have consolidated their hammerlock on energy. Chevron has absorbed Gulf, Texaco has bought Getty, Du Pont (the world's largest petrochemical manufacturer) has swallowed Conoco.

'The simple fact is, the oil companies are the institutional force trying to slow down any kind of change,' says Citizen Action's Rothschild. 'When you look at the culprits in destroying the environment, you've got the oil industry over and over again... toxic wastes, air pollution, CFCs, oil spills like the Exxon Valdez.'

In the Third World, the debt burden remains so high that most countries can't purchase much oil. But, if and when developing countries overcome their economic problems, the potential for growth in fossil-fuel use is enormous.

The transnationals, of course, are poised to garner huge profits in the developing world. Exxon has centralized its overseas operations into a single international oil and gas company. Chevron has reserve properties in 98 foreign countries; ARCO is increasing its oil development in regions like Indonesia. In China, where vast coal reserves are viewed as the key to continuing industrialization, Occidental Petroleum holds 25 per cent of a 30-year joint venture on a huge open-pit coal mine, while General Electric is helping build more coal-powered electric plants.

All of which bodes ill for the future of the earth's climate. If the Third World is not provided with assistance towards energy alternatives, then no matter what the industrialized countries do, fossil-fuel consumption will continue to escalate.

The key to challenging petro-culture in every part of the world lies in controlling those corporations that have shaped our dependence on fossil fuels. To do that, says US environmental eminence Barry Commoner, 'politicians will have to rise above the parochial interests that often motivate them, and companies and individuals will have to focus on the real bottom line...' And the real bottom line is survival.

Dick Russell is a peripatetic US journalist who specializes in environmental issues.

Gas guzzlers

The 70-mile-per-gallon car is ready – but the big companies are loath to start it up. Richard Kazis reports.

HERE are four cars you haven't seen on the road yet: the General Motors TPC, Volkswagen VW-E80, Volvo LCP and the Renault VESTA2. Can you name three things they have in common?

First, each one gets over 60 miles a gallon in city traffic and well over 70 miles a gallon on the highway. Second, these cars are prototypes that already exist and could be on the road by the end of the century. Third, the auto companies that developed them have no plans to build any of them commercially in the near future.

According to Deborah Bleviss, executive director of the International Institute for Energy Conservation in Washington DC, the obstacles facing the VESTA2 and these other prototypes are not technical. 'Technology is no longer the limiting factor in producing fuel-efficient cars,' she says.

So why won't these cars be mass-produced soon? The answer lies somewhere between the resistance of car companies to retool for fuel efficiency, the preferences of consumers and the refusal of national governments to pass new legislation that would alter market signals significantly.

This is the way General Motors – in classic corporatese – explains it: 'Such vehicles do not have many of the utility and performance characteristics demanded by an overwhelming majority of consumers.'

Translation: consumers don't want fuel efficiency at the cost of acceleration, power and other things they have learned to like. And General Motors isn't about to invest a few billion dollars in developing a new car model they think people won't buy.

There is some truth to this. When oil prices soared in the 1970s, drivers got interested in fuel economy. For a short time Honda Accords sold for a premium above eight-miles-to-the-gallon Cadillacs. But that interest gave way in the relatively cheap-energy 1980s to broad indifference to fuel efficiency. Now consumers are buying cars with more power, equipped with fuel-consuming options like air conditioning.

All these trends make it more difficult for car makers to continue in the direction

of the late 1970s: smaller, lighter and less powerful cars that gave more miles to the gallon. In fact, since 1973 US producers have gone into reverse. Ford, which had reduced the average weight of its passenger-car fleet by 1200 lbs between 1975 and 1983, added 300 lbs to the average vehicle between 1983 and 1986.

If consumers aren't demanding fuel economy and producers don't have any incentive to produce fuel-efficient cars, then governments will need to step into the market. That is what happened in 1975 when the Energy Policy and Conservation Act required annual improvements in average fuel efficiency and imposed a 'gas guzzler' tax on inefficient cars.

But that was the 1970s. During the Reagan years, the Departments of Transportation and Energy joined the car makers in fighting and eviscerating fuel-efficiency standards. Enforcement of the gas-guzzler tax was all but abandoned. Countries that had followed the US lead in the 1970s did the same in the 1980s: improvements in fuel-efficiency came to a halt.

Today, with the new concern over global warming there has been a flurry of legislative proposals for new fuel-efficiency standards. This is a significant political change. According to Deborah Bleviss: 'Two years ago, no one in the industry thought there would be new standards. Now, it may take two or three more years but there certainly will be legislation.'

In the meantime there is still room for improvement. Only about 15 per cent of the energy contained in a gallon of gas is used to propel the vehicle forward. Some of the less radical innovations could easily be incorporated into existing models.

Critics believe it shouldn't be difficult for new national car fleets to average 45 miles a gallon and small truck fleets 35 miles a gallon within ten years. If these standards were met worldwide, fuel consumption by cars and small trucks could drop below 1980 levels by the year 2000.

Richard Kazis works at the Massachusetts Institute of Technology in Cambridge.



Bill's Garage, Route 23, Kentucky: despite pollution monster cars are back in style.



3. Boost alternatives

Getting off the petroleum treadmill (and consequently producing less CO₂) means putting research and resources into clean, non-polluting sources of renewable energy. At the same time we need to pursue energy conservation (cutting down on our overall use of fuel) and energy efficiency (making sure we squeeze as much work as possible from the fuels we do use).



Photo : Maggie Murray/Format

Back from the grave

Nuclear power is being dusted off and given new life as a sure-fire escape from the greenhouse. Stephen Hall argues that this is not only illusory but dangerous – it may distract us from infinitely more effective options.

ADVOCATES of nuclear power see the threat of global warming as a golden opportunity to resurrect their dying industry. The reason is simple: nuclear plants don't produce carbon dioxide (CO₂), the main greenhouse gas.

Politicians like French Environment Minister Brice Lalonde, a founder of Friends of the Earth, are suggesting it's time to 'revisit the nuclear option'. And Canadian Energy Minister Jake Epp believes nuclear power needs to be considered for 'environmental reasons'. Even respected research centres like the

Union of Concerned Scientists and the Climate Institute have jumped onto the nuclear bandwagon.

Despite attempts to paint nuclear power green, the technology is still plagued by three unresolved issues: how to store deadly radioactive materials for thousands of years; how to prevent serious accidents (Chernobyl and Three Mile Island have not faded from the public mind); and a confident, reclusive nuclear priesthood who treat their technology as inherently safe.

These nagging worries have led to a

worldwide collapse of confidence in nuclear power. There are now fewer nuclear plants being built than at any time in the history of the technology. Sweden is phasing out nuclear power altogether; the country will start closing its reactors in 1995 and finish by 2010.

New efforts to revive the industry centre on the development of a second generation of so-called 'inherently safe' reactors based on passive safety systems. Passive systems cool the reactor core without human or mechanical intervention. However as one industry newsletter, *Nucleonics Week*, comments: 'Experts are flatly unconvinced that safety has been achieved – or even substantially advanced – by the new designs.'

But suppose the nuclear industry could suddenly solve all its problems and rush a new safe reactor into production. Would an all-out nuclear construction program be enough to slow greenhouse warming?

Not likely, says the Rocky Mountain Institute (RMI), a Colorado-based think-tank specializing in energy policy. RMI researchers found that backing nuclear power was a poor alternative to investing in increased energy efficiency – improving the ways in which we already use electricity. According to the RMI study, even if a thousand-megawatt nuclear plant was built every two days for the next 40 years, overall CO₂ emissions would still increase. This is because nuclear power can only displace coal-fired electricity plants and not the bulk of CO₂ emissions which come from automobiles, factory smokestacks and home furnaces.

The researchers also looked at the costs of nuclear versus improved energy efficiency. The results? They found that every dollar invested in energy efficiency displaces nearly seven times more carbon than the same investment in nuclear power. 'To the extent that investments in nuclear power divert funds away from efficiency,' the study concluded, 'the pursuit of a nuclear response to greenhouse warming would effectively exacerbate the problem.'

Unfortunately, according to RMI Research Director Amory Lovins, politicians choose energy options based on the 'Chinese-restaurant-menu' approach – buying one option from Column A, one from Column B and so on, until all constituencies are satisfied. However, notes Lovins, 'on today's energy menu all the best choices may be in column A (efficiency) with column B (supply expansion) only a bad second best'. Since his 1976 book *Soft Energy Paths*, Lovins has been a key advocate of energy efficiency: an approach which turns conventional supply-and-demand theory on its head.

Lovins and other energy-efficiency supporters believe the trick is to wring the most work out of the energy we already produce. In fact, studies worldwide (including reports done for Canada's

energy ministers and Britain's Association for the Conservation of Energy) confirm that energy efficiency is the simplest, cheapest and fastest way to reduce our dependence on fossil fuels.

One tiny example is the spread of high-efficiency compact fluorescent lamps. These use 60-80 per cent less electricity than incandescent bulbs, last 10-13 times longer and use half a tonne less CO₂ and eight kilograms less sulphur dioxide over five years. When a homeowner saves a kilowatt hour of electricity with an energy-efficient light-bulb, it's a kilowatt hour the power company doesn't have to generate. When the saved kilowatt hours from all possible sources are added up, the need to build

new coal plants or oil rigs is eliminated. In fact the savings are so great that Southern California Edison gave away over half a million of these super-efficient lights to their low-income customers because it was cheaper to do that than to operate existing power plants.

Super-efficient appliances, motors and windows are also widely available and spreading very quickly. High-performance windows combine invisible metallic coatings and inert gas between the panes to double or triple the efficiency of a conventional, double-glazed window. If these windows were installed in homes and offices, the energy equivalent of one North Sea oil deposit could be saved in Britain alone. In the US, improved

standards for domestic appliances will eliminate the need to build 22 large power plants by the year 2000, according to Howard Geller of the American Council for an Energy Efficient Economy.

Energy efficiency and conservation can dramatically slow global warming, allowing us time to make a transition to a renewable energy future. That seems clear. What is less certain is whether renewed interest in the nuclear option will retard the choice. We need to make sure it doesn't – because our energy future will determine the future of our planet. □

Stephen Hall is an energy consultant and a connoisseur of vegetarian restaurants.

The sun also rises

Solar energy seems an obvious choice for the Third World. But lots of sun does not guarantee success. Teal Derrer reports from the Dominican Republic.

ON an ordinary night in the village of Bella Vista, near Sosua in the Dominican Republic, a domino game is usually in session on the porch of Medrano's store. In the bright light inside people are shopping. Gregorio Medrano is pleased with the solar photovoltaic system he purchased in 1986: 'If the store is dark, the business is slow. But with a lot of light everybody gathers and spends money.'

Richard Hansen, a Boston-based solar-energy enthusiast, began selling photovoltaic (PV) electric systems in 1984. Felipe Martinez was the first to invest in one – two of his sons have since trained as technicians. 'I've often said that we should gather people from all the towns around here to tell them about solar energy so they can take advantage of it,' says Felipe.

One of Hansen's systems costs \$500 and will run for at least 20 years with no fuel costs. It includes a 40-watt photovoltaic panel, storage battery, control box, two 15-watt incandescent lights, a 15-watt fluorescent light and outlets for television or other home appliances. Advertised by word of mouth, there have been over 600 systems installed since 1984 – and there's a continual waiting list.

Solar energy has taken off in the Dominican Republic because it meets people's needs. In rural areas 70 per cent of the people live beyond the reach of power lines. PV can be installed anywhere and is cheaper than the kerosene and batteries people normally use for lighting or to power a radio or television. It eliminates the weekly trip into town to recharge batteries, and it provides jobs for the local technicians who install and repair the systems.

Living and working closely with Dominicans over the past six years, Hansen designed a system tailored to local needs. As the demand increased, he created a local infrastructure to meet it: training technicians, setting up a revolving loan fund, running a small-part store, even helping to establish his competitors.

Despite its commercial success in the Dominican Republic solar power is still struggling to overcome its image as a second-rate energy source. The reason is that many solar projects have been funded, built and abandoned in a top-down development style. Often they are intended more as demonstrations than as functioning systems. Or they are aid projects which don't involve local people, rely on parts and technology not available within a hundred miles, and are monitored and maintained for only a short period.



Dominican solar installers: local labour.

A typical example was the centralized photovoltaic village power system installed in 1984 on Utirik in the Marshall Islands. Financed jointly by the Utirik Village Council (with \$100,000 from its atomic-test reparations payments), NASA and the US Department of Energy (with an additional \$180,000), the project was supposed to put a solar electric system in place that could easily be duplicated elsewhere.

Three years later, an independent study by California-based Energy Resources International found the system was riddled with problems. 'Residents have now been separated from the energy resources they know, understand, and have traditionally

been very close to,' the study concluded. 'They have a complex technology they don't understand... The central power plant moves them further from any individual or personal contact or responsibility for how they use energy... The complexity of the system raises the possibility that the island will continue to be dependent on the US to keep the plant running...'

Comparing Utirik with the Dominican Republic is instructive. In both cases PVs proved to be the cheapest option. But while Utirik required \$280,000 up front, Hansen set up a financing system with an original grant from USAID of \$2,000 and an additional grant two years later of \$3,300. He took advantage of the fact that a single PV system can be installed as cheaply as a large, centralized system. This allows for gradual, dispersed growth and is well suited to Third World economies.

The Dominican model shows how solar technologies can increase self-sufficiency and improve the local economy. Because each household manages its own power supply, there is an incentive to use the electricity judiciously. If a family wants to increase their supply, they simply add another photovoltaic panel to their system. Although the panels are purchased outside the country, the other components as well as the installer's labor are local. Once the system is paid for, the supply as well as the cost is assured – not true of systems relying on imported fossil fuels. In addition, the foreign-exchange value of a typical system is recovered in half its 20-year lifespan.

So the success of solar electrification in developing countries depends on how well it meets the specific needs of its users: careful planning and design are more important than pots of money. Richard Hansen believes that the key is community participation. 'If the people are going to use this technology, the same people have to develop it, right from the word go.'

Teal Derrer is a solar-energy enthusiast and writer. She lives in San Francisco.

GLOBAL WARMING - THE FACTS

CLIMATE AND WEATHER

The difference between climate and weather is like the difference between the forest and the trees.

Weather is what we experience (and complain about) on a daily basis. We understand it in

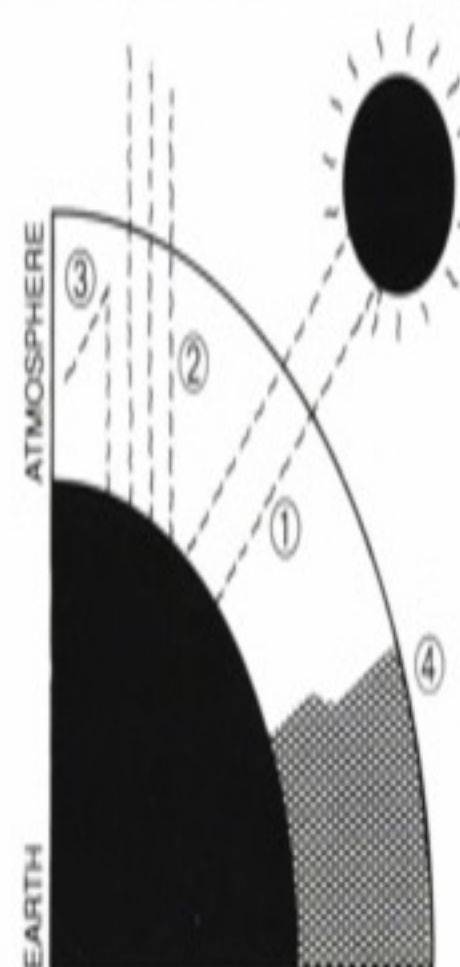
the familiar terms of the weather report: cloudy, windy, rainy, humid, sunny or snowy.

Climate is a description of average weather conditions over time, a period of at least 30 years or more.

MAIN CLIMATE TYPES ¹	WHERE	AVERAGE WEATHER
Equatorial	Zaire Basin, Amazon, SE Asia	hot and wet all the year round
Tropical	Parts of Central Africa, India, Brazil, Central America	hot, wet summers; warm, dry winters
Warm humid	SE US, N Argentina, S and Central China	summer rainy season; drier winter
Mediterranean	Mediterranean, southern Australia, California	hot, dry summer; rainy winters
West Coast Temperate	NW Europe, SW Canada	wet through the year; equable temperatures
Continental	N American plains, Russian steppes, Argentine pampas	moderate summer rain; extremes of temperature
Desert/mountains	Sahara, Central Australia, Himalayas, Rockies, Andes	low rainfall; temperature extremes

Seen from space, our planet is a green and blue orb floating in an apparently lifeless cosmos. A fragile balance, a fine ecological interdependence, exists in the natural world which keeps the earth pulsing with life. Here the NI details how that balance is now being upset by the depredations of humans.

THE GREENHOUSE EFFECT



A layer of gases in the atmosphere acts like an insulating blanket trapping solar energy that would otherwise escape into space. Without these 'greenhouse gases' the earth would be frozen, barren and lifeless.

HOW IT WORKS

1. Solar energy enters the atmosphere unaffected by greenhouse gases.
2. The sun's rays are absorbed by the earth, then reflected back at longer heat wavelengths.
3. Greenhouse gases absorb this heat, then send it back to the surface.
4. When greenhouse gas concentrations increase, more heat is captured causing temperatures in the lower atmosphere and surface to rise. This affects both weather and climate.

FEELING THE HEAT

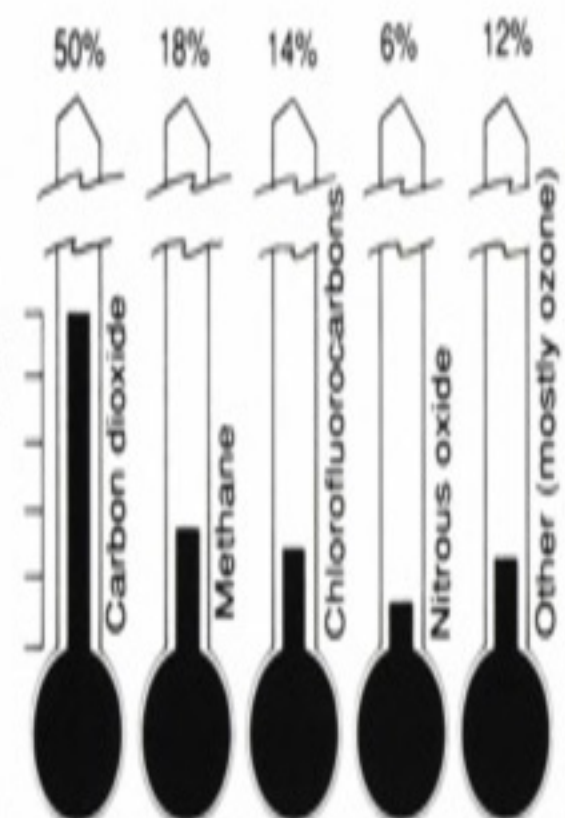
Over the past 300 years, as a result of human activity, concentrations of the main greenhouse gases have increased significantly. There are strong indications that global warming has already begun as a result.

● In the last 90 years the earth has warmed by about half a degree centigrade. That may not sound like much – but a small change can make a big difference. Our average global temperature is only 5°C warmer today than during the last ice age 13,000 years ago.¹

● The present global surface temperature is about 0.4°C higher than the mean value from 1950 to 1980.

● The 1980s were the warmest decade on record; the warmest years this century were (in order) 1988, 1987, 1983, 1981, 1980 and 1986.²

Estimated contribution to global warming of main greenhouse gases in the 1980s.³



CONSTANT CHANGE

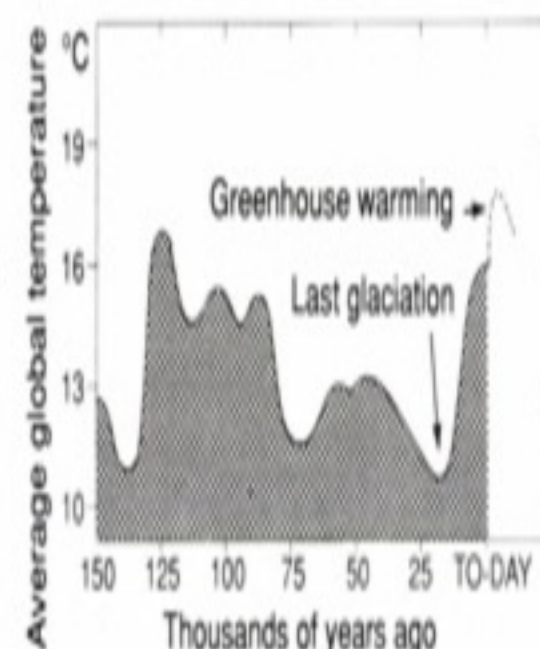
Climate results from interaction between the atmosphere, the oceans, the land surface, the polar ice caps and biological life (plants, animals and humans). Our climate is constantly changing, but most of the change takes place over generations and goes unnoticed. However, a sudden extraordinary event in one place can bring about rapid change all over the globe. For example:

● Dust in the atmosphere from volcanic explosions can result in cooling due to increased reflection of solar energy. A huge volcanic eruption in Indonesia in 1815 has been linked to the 1816 'year without summer' in the eastern US and Canada.⁴

● In 1983 El Niño, a warm ocean current off the Peruvian coast, was 7°C warmer than usual.

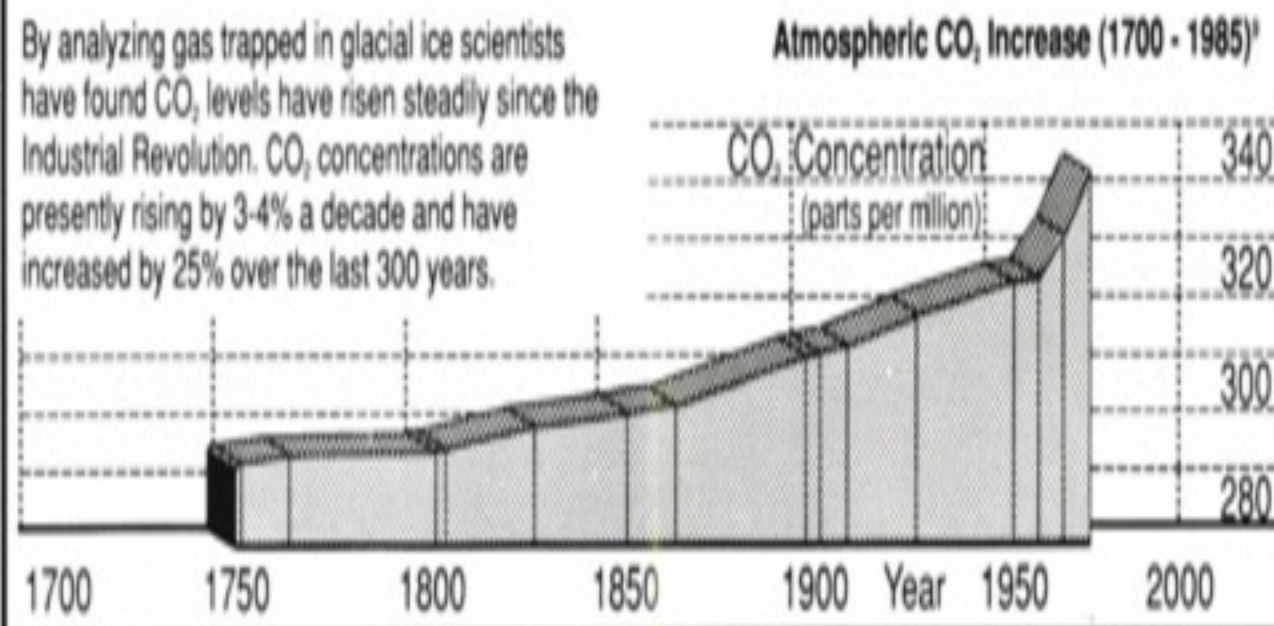
Weather across the world was altered – including floods along the west coast of North and South America and droughts in southern Asia, Africa and Australia.

Historic climate change⁵



COLD COMFORT

By analyzing gas trapped in glacial ice scientists have found CO₂ levels have risen steadily since the Industrial Revolution. CO₂ concentrations are presently rising by 3-4% a decade and have increased by 25% over the last 300 years.



1 The Gaia Atlas of Planetary Management, ed. Norman Myers (Doubleday, 1984). 2 Climate Change and Variability, Environment Canada Fact Sheet, 1986. 3 Ibid. 4 The Greenhouse Gases, Environment Canada Fact Sheet 1986. 5 The Changing Climate, Stephen Schneider (Scientific American, Sep 1989). 6 Global Climatic Change, R Houghton and G Woodwell, (Scientific American, April 1989). 7 World Resource Institute as noted in The Economist, 11 March 1989. 8 Solving the Greenhouse Dilemma, Association for the Conservation of Energy, 1989; Policy Options for Stabilizing Global Climate, US Environmental Protection Agency Executive Summary, Feb 1989; see also above point 4. 9 The Greenhouse Gases, UNEP, 1987. 10 Global Warming, C Flavin (Worldwatch, 1989). 11 Ibid. 12 Developing Policies for Responding to Climatic Change, UNEP and WMO (Vienna, Austria, 1988).

PUMPING GAS

THE MAIN GREENHOUSE GASES.

Carbon dioxide (CO₂)

Source: Comes mostly from burning fossil fuels (oil, gas and coal) for electricity and in cars and factories. Also from forest burning.

Annual increase: 0.5%

Life span: 7 years

Methane (CH₄)

Source: Bacterial decomposition of organic matter (without oxygen) in rice paddies, swamps and intestines of ruminants like cows and sheep. Also from burning wood, mining coal.

Annual increase: 1%

Life span: 10 years

Traps heat: 30 times stronger than CO₂

Chlorofluorocarbons (CFCs)

Source: Chemically synthesized for use as coolants in refrigerators and air conditioners.

Also used in foam insulation, aerosol sprays.

Annual increase: 6%

Life span: up to 15,000 years

Traps heat: 10-20,000 times stronger than CO₂

Nitrous oxide (N₂O)

Source: Bacterial reactions in soil and water and from the breakdown of nitrogen-based chemical fertilizers. Also from burning fossil fuels and wood (deforestation).

Annual increase: 0.4%

Life span: 170 years

Traps heat: 150 times stronger than CO₂

Surface Ozone (O₃)

Source: About 75% of surface ozone results from photochemical reaction of sunlight on vehicle pollutants (carbon monoxide, nitrogen oxide and nitrogen dioxide).

Annual increase: 2%

Life span: 2-3 weeks

Traps heat: 2,000 times stronger than CO₂

CARBON CULPRITS

Carbon dioxide is the single most important greenhouse gas and is linked directly to industrial development and deforestation.

● When all greenhouse-gas sources are added together the responsibility for global warming is as follows⁶:

The West (15% of world pop.) – 46%
USSR/Eastern Europe (7% of pop.) – 19%
Third World (78% of pop.) – 35%

Fossil fuel carbon emissions (1987)⁷

Country	Amount (million tons)	Per \$ GNP (grams)	Per person (tons)
US	1,224	276	5.03
Canada	110	247	4.24
Australia	65	320	4.00
USSR	1,035	436	3.68
Saudi Arabia	45	565	3.60
Poland	128	492	3.38
W Germany	182	223	2.98
UK	156	224	2.73
Japan	251	156	2.12
France	95	133	1.70
S Korea	44	374	1.14
Mexico	80	609	0.96
China	594	2,024	0.56
Egypt	21	801	0.41
Brazil	53	170	0.38
India	151	655	0.19
Indonesia	28	403	0.16
Nigeria	9	359	0.09



WEATHER WARNING

Sophisticated computer models predict the earth's surface temperature will rise between 3° and 5°C by the middle of the next century – change unprecedented in human history. The exact impact of such a change is unclear. But scientists predict¹²:

● greater extremes of weather; more storms and hurricanes in humid tropical countries and drier, hotter weather in semi-arid tropical regions with consequent disruption of food production and water availability.

● higher temperatures will melt polar ice sheets and glaciers, increasing sea levels by between 1 and 3 metres in 60 years, and causing widespread flooding. The great river deltas of the world would be inundated – it is estimated that a mere 50 cm rise in sea level would permanently flood 12% of Bangladesh. Egypt could lose 20% of its arable land, affecting some 10 million people.

● plants and animals will be unable to adapt to rapid temperature increases and new climatic conditions. Vast forests in Canada, Scandinavia and the USSR could die resulting in massive forest fires and the release of a huge volume of additional CO₂, thus accelerating global warming.



4. Ban CFCs

Chlorofluorocarbons have achieved fame as the cause of the thinning of the ozone layer. But they also form a potent greenhouse gas, 20,000 times more efficient at trapping heat than CO₂. These synthetic chemicals cause about 25 per cent of global warming and their use is increasing at about six per cent yearly. They should be outlawed as quickly as possible.

Can science save us?

Fred Pearce describes the frenzied scientific search to find a magic cure for global warming.

'How to solve the carbon dioxide problem without tears' was the name of a paper at a 1988 Moscow conference. The idea was to use nuclear power to turn Siberian natural gas into hydrogen – which would then partly replace fossil fuels like coal and oil. The result: cleaner energy, no carbon dioxide (CO₂) and no greenhouse effect.

It seems every scientist is chasing a 'technical fix' to shut down global warming. Last summer a Swiss physicist published details of how a giant aluminium mirror put into space could reflect some of the sun's heat away from the earth's surface, so keeping us cool. It would have to be a big mirror, of course. One about 20 times the size of Britain would keep us going for a few decades. It would cost about as much as the world currently spends on 20 years worth of armaments.

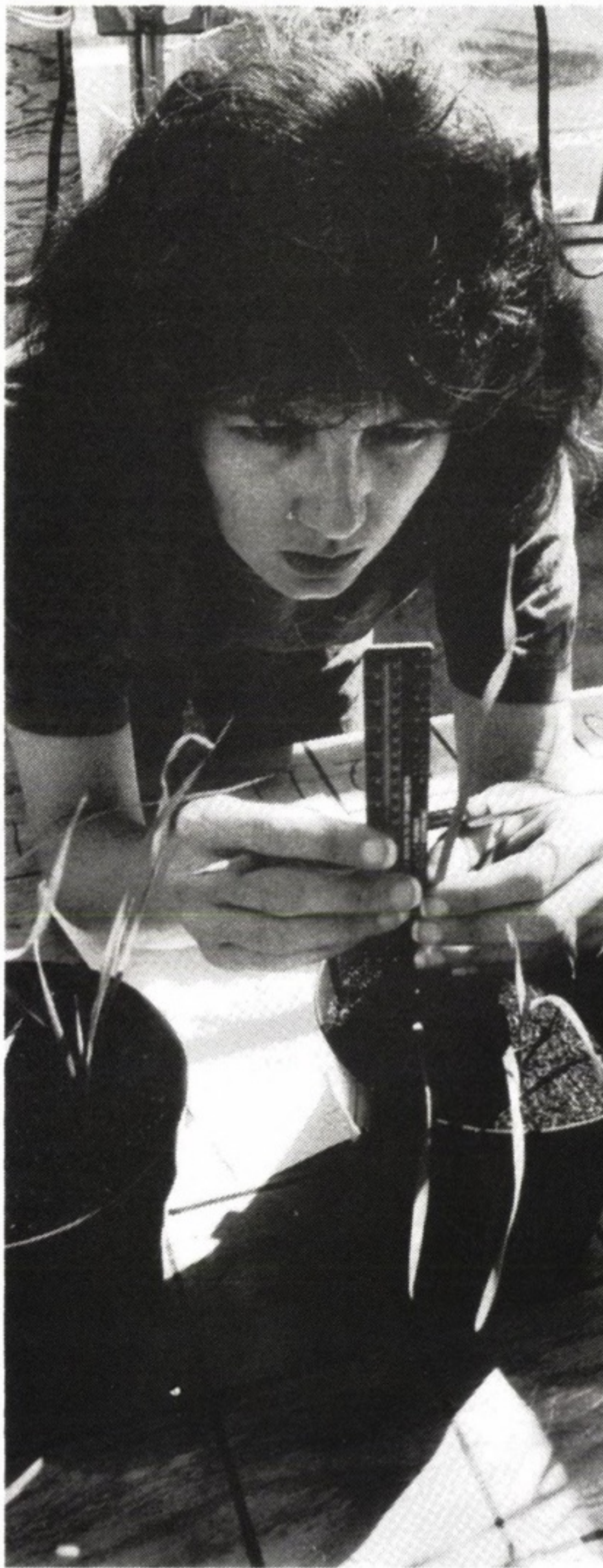
Somebody else said it would be easier to reflect the sun's heat back from the surface of the earth. Trillions of white polystyrene balls floating on the world's oceans might do it. Or we could paint the deserts white.

Geologists take a different tack. There is (very expensive) technology available to remove CO₂ from the chimneys of power stations and convert it into liquid carbon dioxide. We could then bury the liquid into old coal mines or oil wells or pour it into sinking ocean currents that would take our pollution into the sea bottom. Scientists have drawn up maps of vast networks of pipelines spreading from the world's industrial centres to coastlines in order to accomplish this task. It might double the price of electricity, they say.

Biologists get in on the act too. One of nature's own methods of recycling CO₂ from the air is to absorb it in the oceans, where it feeds the growth of algae. Up to half the carbon dioxide that we put into the atmosphere today quickly ends up in the oceans. Why not help the process along? In some parts of the oceans, the growth of algae seems to be limited by the amount of iron in the water. So we could sprinkle iron filings on the sea and see what happens.

Another idea that popped up recently is to build giant lagoons along the world's coastlines, where algae could be intensively farmed: 220,000 square kilometres of lagoons would just about do it. The author suggested that it was more feasible than a terrestrial version of the same trick – planting giant forests

A Maryland biologist measures plant growth under conditions simulating ozone depletion.



everywhere, on the grounds that trees too absorb carbon dioxide.

All but one of the above ideas are regarded in serious circles as deeply unserious. The exception is tree planting. At the rate we are going, the world will run out of tropical forests before many decades are past. Isn't it time we planted some more? Some estimates suggest that we could damp down most of the global warming of the next half century or so with new forests the size of the US.

But watch out if you are invited to support the idea of planting lots of trees to help reduce the greenhouse effect. Vast monoculture plantations of fast-growing eucalyptus and acacia are already popping up across the tropics, sponsored by the World Bank or companies like Shell, and for entirely commercial reasons. These plantations are nothing like the real thing. They have no undergrowth, no fruit trees or dead wood or animals – none of the things that make natural forests of value to rural people throughout the tropics. Instead they have fences and guards. That is why they have inspired massive protest movements in India and, more recently, in Thailand. If we need more trees to soak up the rich world's pollution then they should be planted in the rich world.

Amid all the talk of 'technical fixes', we forget that the most obvious methods of responding to the greenhouse effect are probably the best and cheapest. One recent study of 'greenhouse solutions' by a US physics professor started from the premise that 'reducing our energy usage is not an option'. But it is. All the technology for saving energy already exists; it just needs applying. It could be brought in on schedule, with no big changes in our lifestyle – and at no real cost. But we could go even further. Why not spend the next 15 years investing in even better energy technologies; there's lots more potential in geothermal, solar and wind power.

And if we were really feeling brave, we could start thinking about bigger changes to the way we live. Like finding ways to allow people to live close to their work (thus cutting down the need for CO₂-producing cars). By comparison with grandiose scientific cures all this seems very dull. Afterwards we would probably say: 'What was all the fuss about? Why didn't we do it before?'

But it always takes a shock to change things. Only the great London smog of 1952 (when more than 4,000 people died within a week from air pollution) jolted the UK to introduce clean-air laws. Now, perhaps a few scary stories about the greenhouse effect may encourage us to do some extremely obvious things about the way we use energy. □

Fred Pearce wrote *Turning up the Heat: our perilous future in the Global Greenhouse*. He has just finished *Green Warriors*, a book about the international green movement.



5. Save the trees

Forests are gigantic carbon banks, soaking up CO₂ from the air – until it is released when their trees are felled and burned. The clearing of the world's trees for farming and grazing (now mostly tropical rainforests) accounts for more than ten per cent of global warming. Deforestation is an ecological timebomb that must be defused now.



Photo : Sven Simon/Camera Press

Local heroes

Tropical rainforests are more than rich reserves of plants and wildlife. Susanna Hecht believes that if forests are to be saved we must first see the people behind the trees.

WHEN the first Europeans sailed down the Amazon they saw river banks teeming with people and were greeted by flotillas of canoes. Rich fields and orchards adorned the shores. Then European diseases quickly burned through the native populations of the Americas; Amazonian peoples were decimated by waves of smallpox and influenza which followed the trade routes.

Naturalists and explorers who came later had little sense that the majestic forests they so admired were the archaeological record of a human history obliterated by foreign fevers. However, researchers have discovered since that a rich science informs the land-use practices of native peoples. It is now known that indigenous agriculture often increased the numbers of species in an area. The forests themselves were formed from intentional plantings after agriculture.

The Kayapo Indians, for example, brought plants into their Amazonian lands from an area the size of Europe. They

reforested savannas and planted useful herbs and trees under the rainforest canopy. They carefully controlled the regrowth of their fields in ways that also supplied food and habitat for many animals, permitting them to live at densities well above what would be found in a 'natural' forest. As Ailton Krenak, of Brazil's Native People's Union notes: 'Native people don't preserve forest. They live together with it.'

Later forest settlers learned from tribal people, making their living by hunting, farming and by harvesting forest products to sell. In the Amazon, there are now more than two million people who depend on the forest for part of their livelihood.

These people are no friends to those who would turn their forests into ashes. Or to those who would flood millions of

Kayapo leader Paulo Paiakan (above): 'There is no point saving the animals if the forest is burned down; there is no point saving the forest if the people and the animals who live there are killed.'

acres for hydropower. But they also object to Western environmentalists who want parks without people – like the one proposed by the Brazilian government near the Peruvian border that would expel more than 12,000 rubber-tapping families.

Forest people first gained international attention when union leader Chico Mendes was assassinated. Mendes had been forging an alliance between environmental groups in the rich world and the National Rubber Tappers Council. To Amazonian residents he was a charismatic labor organizer. But to environmentalists he was known as a keen advocate of 'extractive reserves' – a type of agrarian reform to protect forests from land speculators. Extractive reserves were immediately recognized by Western environmental organizations as a major conservation step. Parks with indigenous people already exist (like the Guyabeno reserve of Ecuador), but parks incorporating 'peasants' were unknown.

Most Western sympathy for preserving rainforests has been based on a romantic nineteenth-century vision of nature as primordial or 'virgin'. Until recently there was general agreement that forests are best preserved by keeping people out, so that tapirs, monkeys and leopards can cavort in some bucolic Eden without the corrupting presence of humans.

Virtually all of Latin America developed a forest-conservation approach along these lines. What this overlooked was that tropical forests are full of people. Faced with the pillage of the rainforests, the environmental community with its emphasis on parks devised a pastoralism as anti-human as the degraded pastures that replaced the forests.

As the Co-ordinating Committee of Indian Organizations of the Amazon stated in 1989: 'We are concerned that you have left us ... out of your vision of the Amazonian biosphere. The focus of the environmental community has typically been the preservation of the tropical forests and its plant and animal inhabitants. You have shown little interest in its human inhabitants who are also part of that biosphere.'

Extractive reserves are an attempt to change that. But it's not an easy fight. Because of contested land titles and the huge profits to be made from clearing trees, forest protection is a deadly business – as the constant assassination attempts, harassment and murders attest.

Rubber tappers are not anti-development, but they do want to control development on their own terms. According to the National Rubber Tappers Council, about five million acres of forest have been saved by their protests – called *empates*. Men, women and children join together to face off against chain-saw-wielding laborers and the hired guns that protect them. This determination, along with a fierce commitment to labor organizing, has made them a powerful force in some parts

of Brazil. But it has also earned them powerful enemies in the Uniao Democratica Rural – the landowners' vigilante group responsible for Chico Mendes' murder.

Bolstered by the ideology of the 'empty' forest, some environmental groups are enthusiastically supporting 'debt-for-nature' swaps as a way of saving tropical rainforests right now. In countries ravaged by debt, austerity programs and lurching economies, debt swaps are one way for banks to recoup their losses and governments to reduce their debt liability.

A 'debt-for-nature' scheme works like this. A commercial bank is owed some money by a debt-burdened country. A secondary market in this debt exists where the debt can be purchased at a fraction of its face value (these markets were set up so banks could salvage a portion of what appeared to be uncollectable debts). If banks sell the debt to a non-profit organization they can write it off against tax. So an environment group buys the debt at a reduced rate and the nation agrees to pay the full face value in local currency for use in environmental projects. In principle everyone wins: banks get cash and a tax break, environmental groups get a lot of bang for their buck. And the indebted nation gets credit for applying local currencies to national problems – instead of scrambling to boost export earnings to pay off steely-eyed bankers.

In principle there is nothing wrong with the debt-swap mechanism; in practice all has not been smooth sailing. In Bolivia, a national park was proposed in an area of the Amazon inhabited by rub-

ber tappers and Chimanes Indians. But the locals were not involved in the plans and soon found themselves pushed out of the area. Others were annoyed that virtually all the Bolivian environment budget was being spent in the Amazon, when other issues like safe water and erosion control might carry equal weight.

Costa Rica, the favorite country of many North American environment organizations, has also embarked on several 'debt-for-nature' exchanges. But the country's Special Advisor for Natural Resources, Rodrigo Gamez, is phlegmatic. 'I wish we could say "these are our priorities, these are our terms of trade" but it has never been possible for us to set our terms of trade in coffee or cocoa. Countries without power can never determine these things: this is dependence.' Besides, the small sums involved in debt swaps so far have had no tangible effect on foreign debt at all. Says Gamez: 'The reality is, the country can't pay the debt, even in *colones* (the local currency).'

What will keep rainforests standing? Since people chop them down, in the end it will be people who keep them up, whether these are courageous rubber tappers and their *empates* or native peoples protesting against dams in the corridors of the World Bank. The battle is not just over lines on maps or even a marvellous natural resource – it is over justice for the rainforest people. □

Susanna Hecht teaches at the University of California and is the author (with Alexander Cockburn) of *The Fate of the Forest*.

Cry foul, cry freedom

China and India are refusing to abide by international agreements to cut pollution. Outrageous? Save your condemnation until you have understood why, asks Indian environmentalist Vandana Shiva.

WHEN the mercury hit 100°F in many North American cities in the summer of 1988, the issue of global warming took on a whole new urgency. Thermometers registering a few degrees more in the United States suddenly turned climate change into a 'global' issue. The entire scientific community was immediately mobilized.

Contrast this with three years earlier when thousands of famine victims in Ethiopia and Sudan weren't enough to move governments in the North to respond to desertification and drought as global environmental emergencies. True, they sent food aid, but the climate problem remained a local difficulty. These deaths, after all, took place in Africa – they were still 'out there'.

The Northern bias which pushed the 'greenhouse effect' into sudden prominence continues to dominate discussion of the global climatic crisis. The facts are clear: the threat to the atmospheric commons has been building over centuries, mainly because of industrial activity in the North. Yet international discussions seem to focus more on developing countries: the North refuses to assume extra responsibility for cleaning up the atmosphere. No wonder the Third World cries foul when it is asked to share the costs.

Countries like China and India continue to resist global protocols, like the Montreal Accord to cut CFC production by 50 per cent, because they are viewed as instruments to make the Third World pay for damages caused primarily by the North. India and China account for only two per cent of total CFC consumption while the US alone consumes 29 per cent. Other Third World critics resist this 'eco-imperialism', charging that it undermines national sovereignty while generating new costs for those already marginalized by colonialism. The imperative of ecological democracy, they say, demands that the worst polluters pay the heaviest price for cleaning up. Should the Chinese and Indians pay for the Americans to continue using huge gas-guzzling cars?

The contribution of the North to global warming does not stop with its own

A billion trees

Allan Matheson and Yolander Asty on Australia's plans to reforest a continent.

WHEN Australian Prime Minister Bob Hawke promised last July to plant a billion trees by the year 2000, sceptics went scurrying for their calculators. In hard figures Mr Hawke's goal meant planting 100 million trees a year or 273,972 a day. It looked like someone had got their figures wrong; but the numbers were confirmed by Allan Brown, Deputy Chief of the Government's Forestry and Forest Products division. 'The current planting target is ambitious,' he said, 'but not unrealistic.'

Some critics see the 'Billion Tree' project as a glossy public-relations exercise, an attempt to divert attention from more pressing environmental issues – especially an ambitious plan to boost the country's pulp and paper industry. Seven 'world-scale' mills are planned by the year 2000. If they were developed under guidelines suggested by the September, 1989 Industry Task Force, the impact would be devastating. Each of the pulp mills would consume 1.5 million tons of wood per year; within a decade the industry would consume more than ten million tons of timber a year.

Environmentalists argue that there are simply not enough trees to sustain the planned pulp mills and that old-growth forests will be their first target – a suspicion supported by the Government's Pulp Task Force. Critics charge that the value and diversity of the ancient forests can't be compared with the scattered saplings that will result from Mr Hawke's scheme.

The Prime Minister has also said that 'trees combat the greenhouse effect in the short run by providing a means of storing carbon dioxide'. But if thousands of acres of old-growth forests are destroyed at the same time the net effect will be more not less CO₂ added to the atmosphere.

Says Keith Tarlo of the Australian Wilderness Society: 'It's like running into an art gallery and slashing the Mona Lisa to pieces, then walking out and announcing you're instituting Community Finger-Painting Programs to take its place. It may be a good thing, but the two things don't compare.'

Allan Matheson and Yolander Asty work for the Wilderness Society of New South Wales.



6. Fight for fairness

Western countries have built their wealth on 200 years of cheap fossil fuels. In the process they've distorted the world economy and Third World debt has ballooned. Poverty is now the biggest threat to the environment. Restructuring the world economy in favour of the poor is critical to fighting global warming.

greenhouse-gas emissions: there is also the aggressive way it has pushed the Third World onto an energy-intensive path of development. Experts advised Third World governments to switch to the era of 'modernity', assuming that an economy without oil and gas was 'backward' and 'primitive'. The World Bank used energy consumption as a barometer of 'development'. Renewable sources of energy (and economies based on them) were assumed to be unproductive. A popular 1960s text book on the Indian economy was typically dismissive: 'Production is achieved through humans and animals, rather than mechanical power. Most agriculture is unproductive; human or animal manure may be used, but chemical fertilizers and pesticides are unknown.'

The alternative was farming based on fossil fuels and dependent on the petrochemical industry: a system of agriculture that pumps CO₂ into the air from tractors and nitrous oxide from fertilizers in the name of increasing productivity. Welcome to the greenhouse effect.

Yet there is nothing inherently productive about agriculture based on oil and chemicals. In India traditional farmers use about half a calorie of clean renewable energy to produce one calorie of food, while highly mechanized, chemically-based agriculture uses ten calories of pol-

luting, non-renewable energy to produce one calorie of food.

In the cultural transformation associated with development the tractor and automobile were symbols of progress; the plough and bullock cart symbols of backwardness. Now the global climate crisis is forcing us to look again at these symbols – through an ecological prism.

The threat of climate catastrophe is forcing us to measure progress by how much energy we conserve rather than how much we consume. It also allows us to see Third World elites, with their resource-wasteful lifestyles, as part of a global system that impoverishes the planet and the poor. Their privileged status is a major hurdle blocking the Third World's path to ecological survival.

Unfortunately, we do not have the tools to calculate how much damage has been done to developing nations through expensive and ill-conceived advice from

the North. But there is no doubt the introduction of energy-wasteful technology has been helped immeasurably by international aid agencies.

Aid for fertilizer, tractors, transport and energy mega-projects: all of these have primarily been ways for Western corporations to sell more machinery, equipment and engineering services to the Third World. For every dollar of aid given, three dollars worth of business is generated in the industrialized countries.

Multilateral agencies like the World Bank have also helped pave the way for fossil-fuel dependency. In India, the Bank plans to double its assistance for power projects by 1995 to one billion dollars a year. The National Thermal Power Corporation (NTPC) which operates coal-based power plants, is the single largest beneficiary of World Bank assistance. Even today the Bank earmarks 25 per cent of its funds for energy projects. And the Bank too is turning a profit: last year it received \$1.9 billion more in repayment than it loaned out.

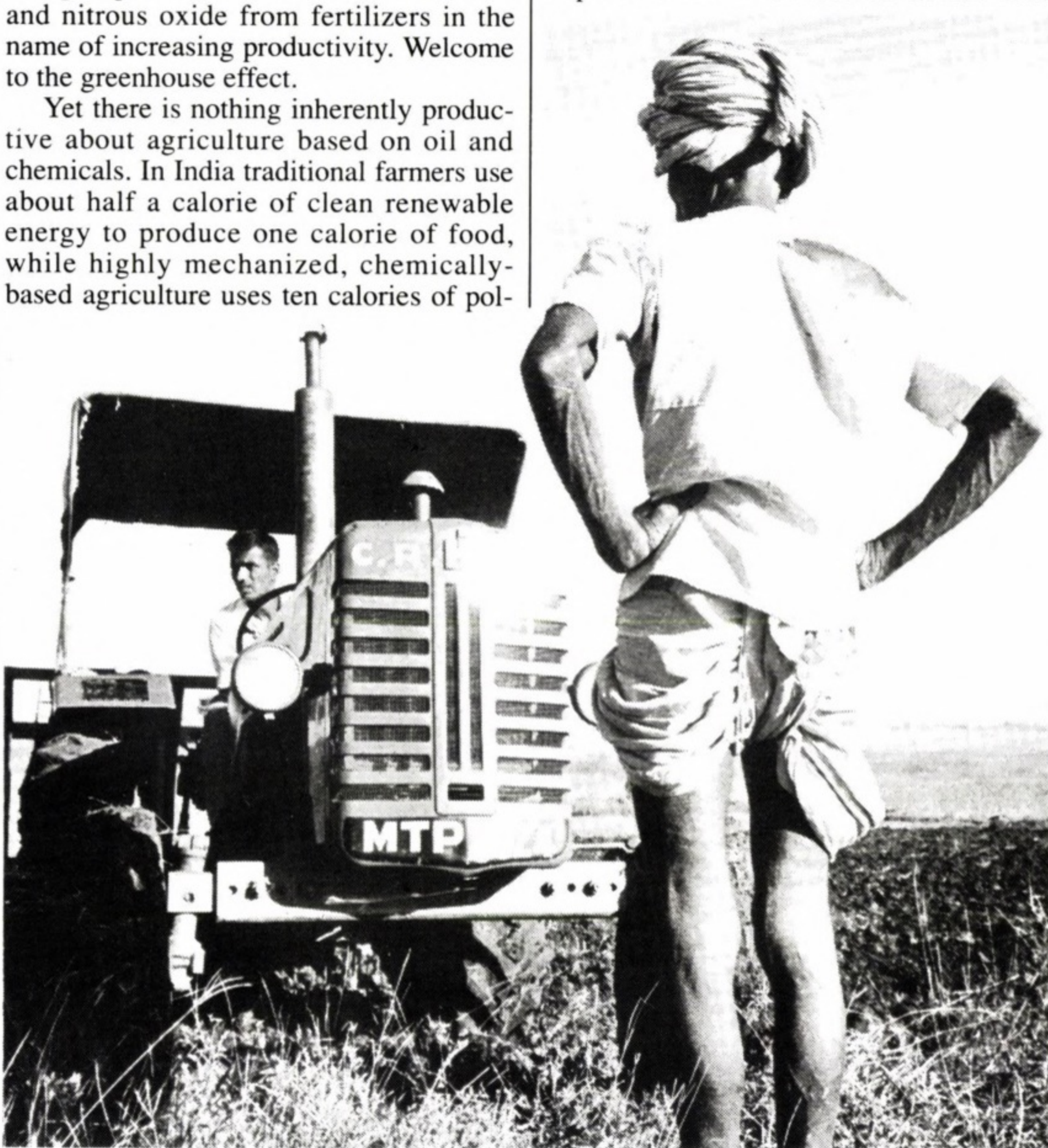
Who is responsible for the greenhouse gases created by these internationally-financed energy projects? Can we leave out the bankers (with their drive for interest) or the corporations (with their drive for markets)? How much of the Third World's growing energy demand is propelled by the profit imperative of the North?

Tropical deforestation is also influenced by rich-world economic pressure. Amazonia is disappearing mainly because of foreign market demands: the land is used to grow cheap beef for Northern consumers and to supply charcoal that will smelt iron for export. South-East Asia's forests are being ravaged to suit the taste for hardwood in Japan and Europe. And as commodity prices fall and debt burdens spiral, the Third World is trapped into exporting more to earn less.

This debt burden now stands in the way of increased spending by the Third World on the environment, a priority which both its own citizens and the global-warming crisis demand. The Northern financial system is centrally responsible for the debt crisis – the result of bad loans and unjust interest demands. As US economist John Kenneth Galbraith has written: 'Such loans, given by foolish banks to foolish governments for foolish purposes, generally are not – and perhaps should not – be repaid.'

If the North is really serious about coming to grips with global warming – whether caused by higher levels of fossil-fuel use or faster rates of deforestation – then debt and unequal trade must be tackled first. Both are reflections of the deep rift between rich and poor which frustrates our search for environmentally sustainable development. (Third World Network) □

Dr Vandana Shiva is director of the Research Foundation for Science and Ecology, India. She is the author of *Staying Alive*.



Culture clash: chemicals and tractors replaced traditional farming methods in India.

Simply...

COOLING THE GREENHOUSE

It is the year 2050. The earth has survived the worst of global warming but people look back on the twentieth century which created the problem as a kind of madness which must never be repeated.

2 Cars were only the first problem: another third of all CO₂ came from coal-burning power stations. All the big power companies were projecting steady increases in electricity demand. 'If global warming means we can't build coal-burning plants, we'll just have to go with nuclear,' they said. After the terrible disasters at Chernobyl and Three Mile Island this began to look like a choice between two nightmares. Finally, some creative energy analysts began to penetrate the bureaucratic fog. They argued that instead of generating more electricity every time demand increased, people had to look at how it was actually used. Saving energy by using it more efficiently was actually like a new source.



3 Any remaining skepticism about global warming changed with the weather calamities of the mid-1990s. Three years of drought in the US and Canadian wheat belt threw the global grain market into turmoil. Wheat exports dropped to almost nil and food riots erupted throughout Africa, the Middle East and the Soviet Union. Drought also parched Australia and southern Africa while fierce tropical storms caused widespread flooding in China, India and Bangladesh. That's when UNCCCAP was mandated to bring the global community together and find ways of reducing greenhouse-gas emissions. By the year 2000 most nations were scared enough to co-operate. Let's move on.

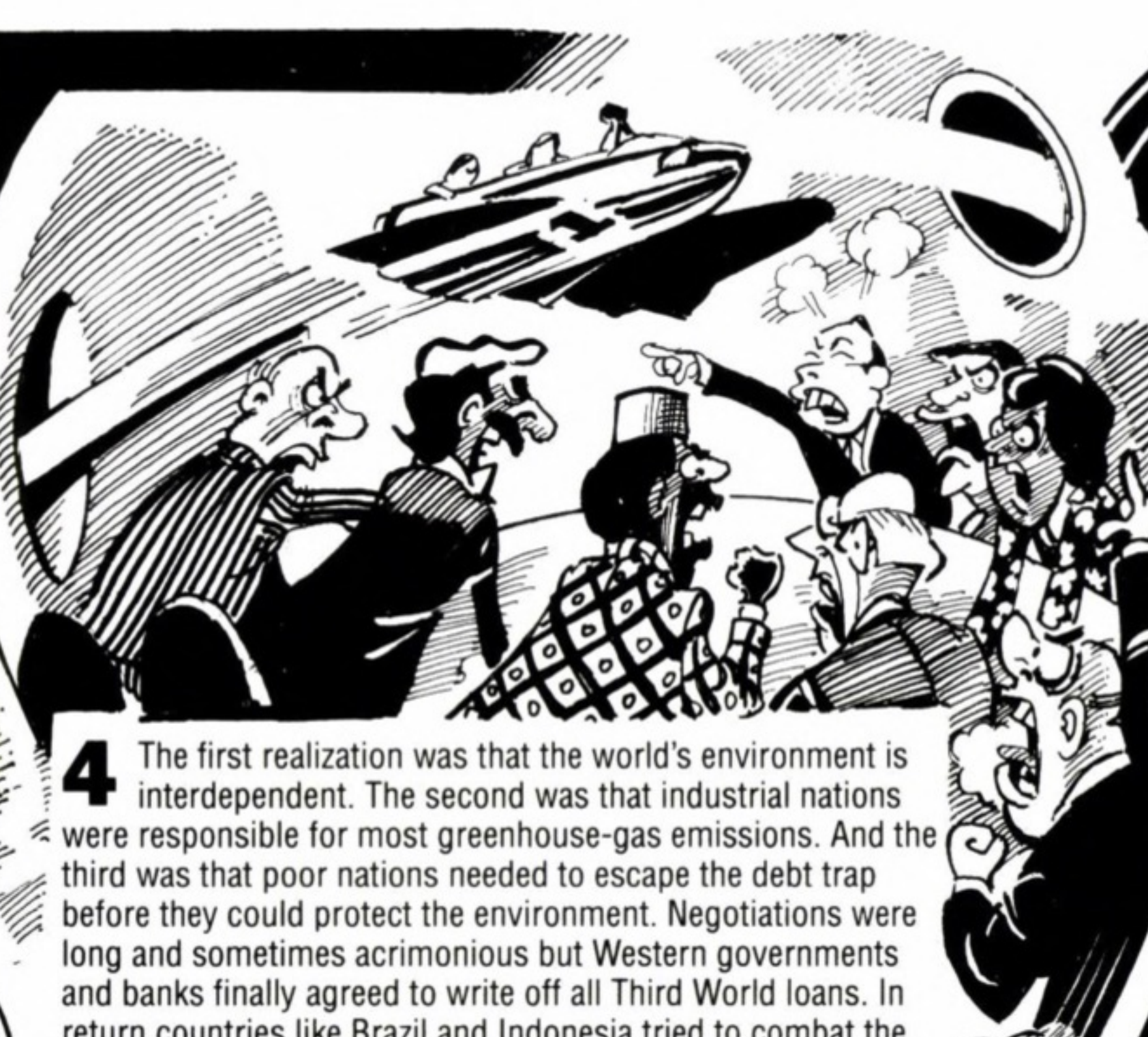
Welcome friends to the Global Warming Theme Park, sponsored by the UN Centre on Climate Change and Atmospheric Pollution (UNCCCAP). After decades of intense negotiations, global greenhouse-gas emissions have finally stabilized – the threat of catastrophic climate change appears to have passed. The exhibits here tell the story of how humans won their greatest victory – over themselves.

1 I hope you're all feeling comfortable. It is hot today, but it would have been hotter if we hadn't done something about the global warming caused by gases like carbon dioxide (CO₂).

Our story begins with the car. Back at the end of the last century cities all over the world were choking with cars. In Western countries cars pumped out a third of all the CO₂. So they had to be banned from all downtown city centres and laws were passed requiring all new cars to average at least 90 miles per gallon. A new fuel-tax

increase was used to subsidize public transport – people could travel free on buses, commuter trains and trams. Special cycling lanes were established; thousands of car parks and filling stations were demolished and grass and trees planted in their place. Slowly but surely, city air lost its yellow-brown haze – with less exhaust belching from hungry engines, people began to breathe a little easier. Let's move on to the next sensurround experience – be sure to keep your helmets on tight.





4 The first realization was that the world's environment is interdependent. The second was that industrial nations were responsible for most greenhouse-gas emissions. And the third was that poor nations needed to escape the debt trap before they could protect the environment. Negotiations were long and sometimes acrimonious but Western governments and banks finally agreed to write off all Third World loans. In return countries like Brazil and Indonesia tried to combat the cutting and burning of their rainforests. Hold on tight as we enter the tunnel.



5 By this time the 'green' vote was so strong that most industrial nations had ambitious tree-planting schemes. It was common knowledge that trees remove CO₂ from the air – the average tree sucks up about four kilograms a year. Millions of trees were planted on marginal lands and on newly cut forest land that had been abandoned. There was also a complete ban on the export or import of tropical hardwoods unless it was from approved forest reserves managed by local residents. This, together with brave efforts at land reform, finally stopped the destruction of tropical rainforests.



6 What really helped us turn the corner on CO₂ emissions was the 'Carbon Tax' that UNCCCAP helped hammer out nearly 40 years ago. Fossil fuels were taxed according to the amount of CO₂ they produced. And the tax was on a sliding scale: big per-capita users like Canada and Australia still pay more than countries like Zaire or India. This touched off a stampede of investment and research into renewable energy sources – that's probably the main reason fossil-fuel consumption has now plunged to 1950 levels and solar power-heated homes and offices are so common.



7 Everyone had to contribute 20 per cent of their total carbon taxes to a Third World Atmosphere Fund. The Fund is still going: money is loaned interest-free to help poor nations pay for renewable energy sources. It was the Atmosphere Fund, combined with technical assistance from the West, that really convinced the Third

World it would not have to sacrifice economic development. Without the Fund, China would still be burning millions of tons of coal and Brazil's tropical forests would be long gone. Most countries also tried to help the people who were hit hardest by the tax, especially those in fossil-fuel industries who lost their jobs.



8 The global surge in 'green consciousness' eventually moved people to question the sacred cow of industrial society – economic growth. Public pressure forced governments everywhere to intervene in the marketplace. Companies had to prove their products were socially useful and did not squander non-renewable resources. Some consumers began to boycott overpackaged goods; others practised 'guerilla shopping' – simply dumping waste packaging in the store. No wonder the amount of garbage has dropped by half in the last 50 years and

nearly 90 per cent of that is recycled.

So global warming is now under control, but sadly the problem hasn't gone away. We've still got the legacy of the 1980s and 1990s to deal with, when the world community was still dithering. Anyway, it's a success story of sorts.

OK now, you've got a half-hour lunch break then it's back in the capsule, which will take you on to the Museum of Animal Diversity containing lifelike robotic recreations of all the amazing species which we didn't manage to save.

Have a nice day.



7. Love your neighbour

The spectre of greenhouse warming will affect the entire global family: the atmosphere does not recognize the boundaries of nation states. So attempts to deal seriously with the problem will require co-operation on a global scale. Bridges must be built between nations in the search for common solutions to common problems.

The denial syndrome

Faced with monumental change, we all tend to convince ourselves that our lives will continue unscathed. But in the case of global warming that very basic human trait – the psychology of denial – may bring about our downfall. Anuradha Vittachi explains.



Illustration: Jackie Morris

ONCE upon a time there was a frog which was dropped into water so hot that it leaped out, shocked – and saved itself. Later it was dropped into tepid water, which it found very pleasant. Then the water began to warm up, but only imperceptibly, so the frog remained lulled and relaxed, becoming more and more warm and sleepy ... until it was too

late to escape, and it was boiled to death.

I was told this story three times in a single day by a Norwegian activist, a US politician and a Soviet scientist, at the massive Global Forum conference in Moscow earlier this year. Each of them stressed their anxiety that human beings were still swimming around relaxedly instead of taking urgent action to save the

planet from the effects of global warming. And it does seem that public interest has been waning since the initial shock of awareness in the summer of 1988. Yet unless we spur ourselves into action soon, it may be too late to act at all; we will drowse, like the frog, to a dismal death.

Why are we so inert? At the Moscow conference, *denial* was offered as the chief explanation. Denial is the psychological process by which a painful truth is pushed out of an individual's consciousness. We use denial as a defence mechanism, to protect ourselves from the force of a truth we imagine will be too shattering for us to cope with. When someone we love dies suddenly, for example, for many months we may keep expecting them to come home as usual. We 'deny' their death, because we can't cope with the loss.

And that may be what is happening in our response to global warming. Certain high-consuming humans (like ourselves in the West) have been putting huge amounts of greenhouse gases into the atmosphere. And now the terrible consequences of this behaviour are beginning to show, we suspect the imminent loss of our high-consumption way of life. Rather than acknowledging that loss and beginning to come to terms with it, we choose to deny the reality of the greenhouse effect.

Humans are chronically attached to the past. We don't like separation from what's familiar: it makes us feel deeply insecure. It always has done, from the moment of birth when we had to leave the womb, or the time of weaning when we had to leave the breast. Courage and psychological strength are needed to face an unknown future – especially when the future seems to be governed by forces beyond our control. But also we don't want to change our pattern of living because we high-consumers have been having a pretty good time. We like our 'modern' high-tech lifestyles, full of gadgets and glitter.

This is where denial comes into its own as a way out. It's a lot easier than thinking up a series of individual excuses – just deny the whole problem exists. Perhaps it won't happen, this greenhouse effect. There isn't any really hard evidence yet, is there? ('The water's just pleasantly warm,' said the frog, dreamily.)

Some scientists and politicians are experts in denial. A few centuries ago they knew the earth was flat. In the 1970s they knew that chlorofluorocarbons (CFCs) were harmless. And now some scientists know greenhouse warming is not a problem. Kenneth Watt, professor of environmental studies at the University of California, calls the greenhouse effect 'the laugh of the century'. Is Professor Watt right? Or is he denying a truth he finds uncomfortable?

But let's be charitable to those who deny. Denial isn't always bad. A woman who cleans the house all day to make it inviting for her devoted husband may one

day discover a letter revealing a rapturous affair. She may stop cleaning, call a lawyer, throw her husband out and get a job – or she may go on polishing the furniture with redoubled vigour telling herself she misread the letter. But the period of denial may be an important shock absorber: while superficially she denies and polishes, she may be gathering strength to make her break and go back out into the world. Perhaps we too, as a society, are going through a period of shocked denial while we adjust. After all, the psychological changes we are being asked to make are sudden and profound.

We are being asked, for example, to dethrone the god of growth after centuries of apparent industrial success. We are being asked to believe that the Cold War is over and that national sovereignty is no longer the highest good, despite centuries of personal sacrifice in nationalistic wars; to hold 'earth patriotism' as more valuable than nationalism; to see 'the enemy' not as Soviets (or Americans) out there but to reconstruct it mentally as our own inner fear and greed.

And we are being asked to see nature not as a form of life secondary to humans, submitting willingly to our domination and exploitation, but as a complex, wondrous, universal system, of which we are just one small, integral part – and a rather disreputable part at that. These are just a few of the fundamental changes of perception being thrown at us, and during a very short space of time. After all, it isn't long ago that Ronald Reagan was saying: 'A tree is a tree. How many more do you want to look at? If you've seen one, you've seen them all.'

No wonder we are finding it so hard to adjust. But my sympathy for us shell-

shocked consumers starts to fade when one particularly nasty form of denial rears its ugly head, and that's the *displacement* of our responsibility for the damage we've caused onto those who are not in a position to argue back. Ronald Reagan, for example, apparently claimed that 'trees cause pollution'. How's that for blaming the victim? Fortunately, not many people took Mr Reagan's views seriously. Far more worrying is the veiled victim-blaming indulged in by influential environmental experts who ought to know better. They seem to be reactivating the 1960s population-bomb bogey, blaming future greenhouse disasters on consumption caused by population growth among the poor, instead of consumerism-led consumption in the West.

But an average Briton uses 50 times as much electricity as an average Indian. So even if the population in poor countries doubled to eight billion people by the year 2030 and the rich countries' population remained static at one billion people, the rich would still be doing far more environmental damage through consumption than the poor.

And even if, by some political and economic miracle, every one of the poor eight billion people were allowed to earn and consume twice as much as they do now, the small numbers of the rich would still be consuming the lion's share. Added to this is the fact that several Western European countries are actively encouraging population growth (at least of white babies, though not of black) in their own high-consuming nations. Clearly, it is not consumption per se that worries the West but who gets to go on doing it.

A little serious energy-saving by the rich would make far more difference than

any heartbreaking, subliminally racist manipulation of the poor. But this kind of practical information is not always welcomed by First Worlders (whichever country they were born in: being a member of the First World depends on your state of mind and your bank balance, not on geography). This is because it forces them into changing their own ways of behaving.

When, for example, an Indian delegate at the Moscow conference pointed out that some of the panelists' sentimental whimsies (like: 'We should see the birds and animals as delegates here') might not be as useful as vegetarianism, he was clearly regarded as a crank rather than as a man with a simple, practical suggestion. He was urged from the platform to let individual freedom rule: people should have the right to change their diets only when and if they wanted to. Fine. Just as mothers and fathers should have their individual freedom to have children when they choose – and not according to the panelists' preferred population figures.

To sum up, there are two main threats at present to the stability of the global temperature: massive damage caused by the rich world's consumption levels, and some damage caused by the poor. Both of these threats could be mitigated straightforwardly by a willingness in rich consumers to stop denying or displacing the problem. The outcome would be not only a safer planet but also a cleaner, greener, fairer life for everyone, rich and poor alike. □

Anuradha Vittachi is a former NI editor and author of *Earth Conference One*, a book about global survival.

Ideas for Action

INTERNATIONAL

Climate Action Network Europe: Annie Roncerel, Université Catholique de Louvain, Institut d'Astronomie et de Géophysique, Chemin de Cyclotron 2, B-1348 Louvain-La-Neuve, Belgium. Tel (10) 473339; North America: Kai Millyard, c/o FOE, 251 Laurier W, Ottawa, Ontario K1P 5J6. Tel (613) 230-3352.

Global Greenhouse Network, c/o Jeremy Rifkin, 1130 17th St NW, Ste 630, Washington DC 20036. Tel (202) 466-2823.

AOTEAROA/NEW ZEALAND

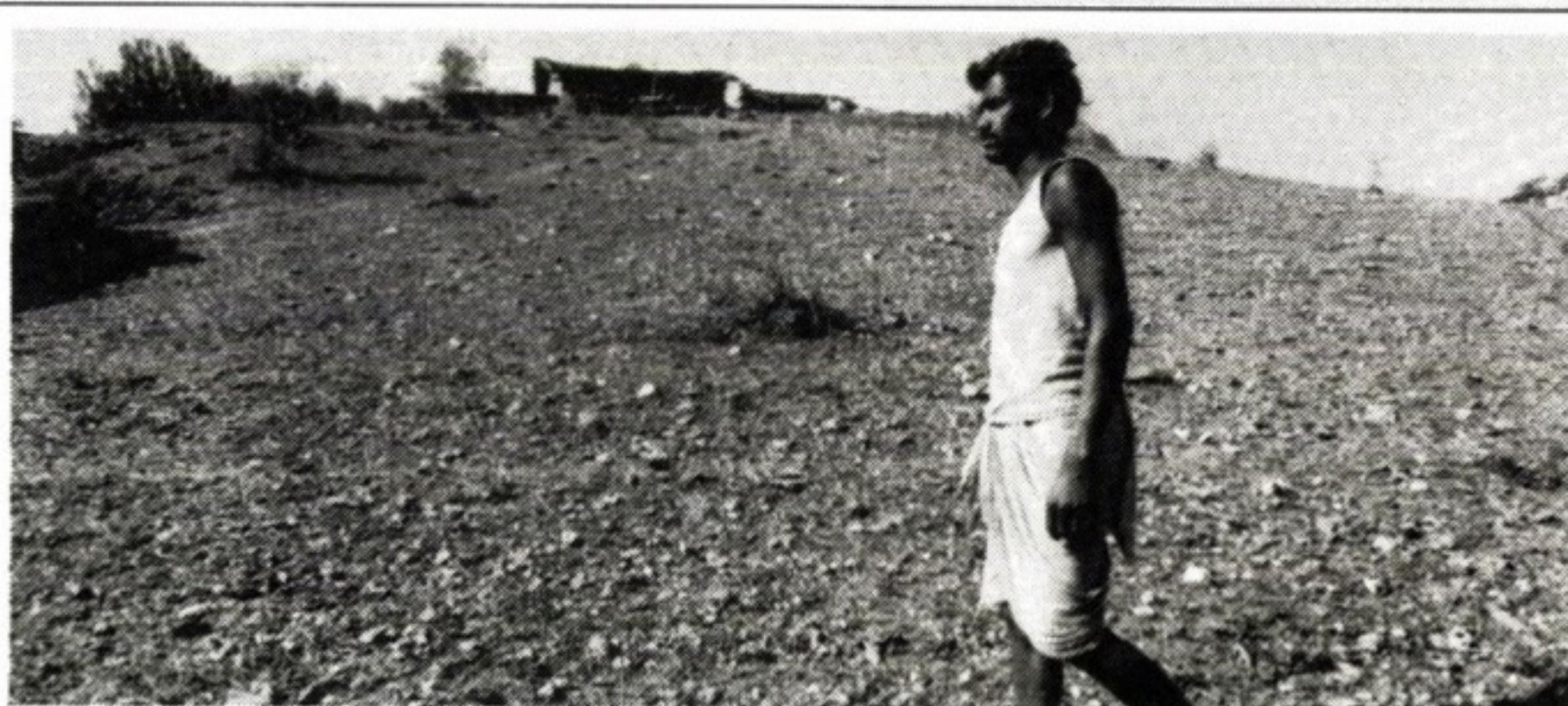
Climate for Change Wellington: Molly Melhuish, 42 Waitohu Rd, York Bay, Eastbourne, Tel (04) 684 873; Auckland: Jeanette Fitzsimons, Dept of Planning, Auckland University, Tel (09) 737-999 ext 8594; Christchurch: John Peet, Dept of Chemical and Process Engineering, Canterbury University, Tel (03) 667-001.

AUSTRALIA

Australian Conservation Society, 340 Gore St, Fitzroy, Victoria. Tel (03) 416-1455.

The Wilderness Society (NSW), 57 Liverpool St, Sydney, NSW. Tel (02) 267-7929.

Friends of the Earth, 56 Foster St, Surrey Hills, NSW, Tel (02) 211-3953.



CANADA

Greenpeace, 587 Bloor St W, Toronto, Ontario M6G 1K1. Tel (416) 538-6470.

Friends of the Earth, 251 Laurier Ave W, Ste 701, Ottawa, Ontario K1P 5J6. Tel (613) 230-3352. FAX (613) 232-4354.

Atmospheric Environment Service, Canadian Climate Centre, 4905 Dufferin St, Downsview, Ontario M3H 5T4. Tel (416) 739-3423.

UNITED KINGDOM

Friends of the Earth, 26-28 Underwood St, London N1 7JQ. Tel (01) 490-1555. FAX (01) 490-0881.

Greenpeace, 30-31 Islington Green, London N1 8XE. Tel (01) 354-5100.

UNITED STATES

Environmental Defence Fund, 257 Park Ave S, New York, NY 10010. Tel (212) 505-2100.

Climate Institute, 316 Pennsylvania Ave SE, Ste 403, Washington, DC 20003. Tel (202) 547-0104.

Environment Action, 1525 New Hampshire Ave NW, Washington, DC 20036. Tel (202) 745-4870.

World Resources Institute, 1735 New York Ave NW, Washington, DC 20006. Tel (202) 638-6300.

Photo: Dexter Tiranti



Falling idols: videos and satellites mean plenty of rest and pay cuts for the film stars of Bombay.

INDIA

Apocalypse now

Film industry reels before video invasion

THE video and TV explosion in India is fast plunging the world's biggest film industry into ruin. Producer Amit Khanna puts it starkly: 'Film-makers are facing the apocalypse.'

An industry in Bombay which once produced 900 films a

year and kept the cash registers jingling is for the first time tasting unexpected bankruptcy. The long ticket queues at all hours for urban cinemas are a thing of the past. Now owners consider themselves lucky if their theatres are half full.

Of the country's 13,000 cinemas dozens have closed already and many more are expected to follow. Star actors like Amitab Bachchan, Anil Kapoor and Vinod Khanna, who once worked on 30 films at a time, are now sitting idle. Bombay film studios that used

to be booked for months in advance for shootings can be hired at any time.

The TV and video boom of the 1980s, which started when Prime Minister Indira Gandhi launched a project to expand the visual media, is to blame. Today 192 transmitters and 176 stations beam TV programmes across the country. TV sets have become licence-free. Major TV programmes are produced in Bombay and New Delhi and beamed via Insat IB, India's domestic satellite.

The number of video

recorders in India is increasing by 35,000 every month, and there are more than 100,000 quasi-legal video parlours. They stay open round the clock and it costs less than half the price of a cinema ticket to see a feature film. There are about 30,000 video libraries and piracy has become big business, generating an estimated \$700 million a year.

To circumvent broadcasting law private entrepreneurs are providing cable TV to some five million people living in blocks or clusters of buildings in the cities. For Rs150 (about nine dollars) a month subscribers get six to ten hours of video a day from a control room in the basement of a block. As a result, out of 126 Hindi films released in 1988 only 17 paid for themselves. Producers are desperately trying to persuade actors and actresses to scale down their pay. Amitab Bachchan charges \$600,000 a picture. New marketing techniques are being tried to sell films to Indians living in the US, Britain, Canada and Singapore. Whether these moves will infuse new life into the moribund industry remains to be seen.

Atiya Singh/Gemini

CITIES

Roof crops

Low-tech solution for Colombia's poor

JERUSALEM is one of the sprawling new settlements formed by the relentless climb of poverty up the hills around Bogota, the Colombian capital. It poses the same problems of low income, overcrowding, ill health and poor diet as many other slum areas around the cities of Latin America. Yet some of these are now being overcome by a revolutionary new scheme.

Tito Lopez is one of many residents of Jerusalem now using simple, low-cost technology to grow fresh vegetables on the only available space – his roof. As part of a UN-sponsored pilot project he has raised the family income by 15 per cent. 'And we've probably improved our diet by 30 per cent,' he says. 'Before we only ate cabbage, onions, bananas, rice and flour. Now we have Swiss chard, radishes, lettuce, tomatoes, celery and carrots.'

The system he uses is the brainchild of Las Gaviotas

Centre, a non-governmental organization specializing in low-cost technologies. The project uses donated rubbish – rice bran from a mill and wooden crates from an autoparts shop – and recycled polythene.

A seed bed is covered with a sheet of black polythene then topped with a thin layer of soil and any porous substance like sand, charcoal or bran. The bed is given a daily sprinkle with a solution containing all the trace elements required for growth. It is delivered either through a watering can or via a simple irrigation system developed by Gaviotas which uses recycled plastic tubes.

The method uses little precious water, costs five dollars per square metre to set up and under nine dollars a year to maintain. Surpluses are sold at guaranteed prices to a newly-established neighbourhood co-operative. The co-op now sells more than three tonnes of vegetables a month. Suppliers of seeds, feeding solution and polythene have sprung up to meet rising demand.

It takes Tito Lopez only two hours a day to tend his plants. Ana Rita Laguna, another Jerusalem resident using the

scheme, says she can now do things she couldn't before. 'I can buy so much material that I am making clothes not just for my six children, but for anyone in Jerusalem who asks.'

The project is part of a United Nations Development Programme initiative aimed at

reducing extreme poverty in 16 Latin American countries. The challenge now is to persuade Latin America's governments to accept the concept and to help to promote it.

Emma Robson/World Development



The greening of Jerusalem: Ana Rita Laguna and her roof garden.

Photo: Emma Robson

AIDS

Bedazzled

Entertaining education for Malaysians

GAY groups around the world continue to take the lead in the battle against AIDS. They are finding fresh ways of getting across the urgent message about safer sex, linking entertainment to education and practical forms of help.

In Malaysia, to mark World AIDS Day on 1 December, 1989, the counselling organization Pink Triangle held a three-day exhibition in the Central Market of Kuala Lumpur. This was easily the largest event in the country, attracting between 7,000 and 10,000 members of the public. Pink Triangle has been in 'show-biz' ever since it started in 1987. It realized that to be effective, especially with young people, AIDS education had to be entertaining. It started its own Drama Troupe who now stage variety shows in discotheques in Kuala Lumpur. But the basis of all Pink Triangle's work is its counselling service. There are currently 32 counsellors, most of them young, who go through Pink Triangle's own training course and three months probation before being designated counsellors.

A core group of more highly trained counsellors, called the AIDS Action Group, deals with the deeper AIDS calls, takes people for the blood test and provides counselling for those who have AIDS and their families.

Reflecting Malaysia's polyglot community, Pink Triangle offers counselling services in 13 languages.

Inevitably there are problems because of Pink Triangle's closeness to the gay community. Behind the scenes there is a good rapport with the Health Ministry. But sadly the Ministry is not allowed to advocate the use of condoms. The Government tends to suggest that AIDS is a foreigners' disease.

A prominent actor-entertainer recently died of AIDS in Kuala Lumpur. There was no mention of AIDS in the obituaries. But as more and more people die 'after a short illness' the truth will eventually have to be acknowledged. Meanwhile the show goes on, as Pink Triangle's dramatists bedazzle, entertain and educate their audiences.

Vance Hall

ENVIRONMENT

Earth day

High hopes for the biggest demo ever

ON 22 April at least 100 million people are expected to take part in what could be the largest demonstration of all time: Earth Day 1990. In thousands of communities around the world there will be events drawing attention to the threat to our global environment.

In the Philippines there will be a consultation on bio-diversity and in Costa Rica a North-South conference on the disappearance of tropical rainforests. Residents of Seattle will demonstrate against pollution in Puget Sound. Schoolchildren in Mauritius will plant trees. A team of climbers from the US, the Soviet Union and China intends to reach the summit of Mount Everest and clean up the debris left by previous expeditions.

The first Earth Day took place in the US on 22 April, 1970. It mobilized more than 20 million Americans demanding



A devastating spectacle: a forest clearing, Yungas province, Bolivia.

action on pollution and environmental legislation. The Environmental Protection Agency, the Clean Air Act and a host of pressure groups such as Friends of the Earth emerged as a result.

This time the event will be international – a response to the fact that environmental threats are global in scope. More than 100 countries from Czechoslovakia to Bangladesh are planning activities.

In the UK both environment and development groups are collaborating to publicize how the burden of debt contributes to the

destruction of the environment, particularly the rainforests. The 14 countries with rapid loss of rainforests are amongst the 17 most heavily indebted countries. A major focus of the campaign is the demand that banks accept responsibility for over-lending and reduce or cancel the debts of the world's poorest countries.

It remains to be seen whether politicians over the next decade will follow the example set by their citizens and co-operate to defend the endangered Earth.

Gerard Darby

CONSERVATION

Elephant ban

Zimbabwe says ivory trading should go on

ON the face of it, the international ban on trade in ivory that came into effect in January is the best way to protect the elephant, which in parts of Africa is threatened with extinction. But five Southern African countries, led by Zimbabwe, oppose the ban, saying that they have more elephants than their environment can sustain. The argument raises basic questions about the relationship between people and wildlife.

Zimbabwe stands to lose some six million dollars a year from the closure of traditional ivory markets; at least 30 per cent of the 800 people employed in the industry face the immediate loss of their livelihood.

Rowan Martin, of the Department of Parks and Wildlife Management, believes that Zimbabwe has a successful wildlife conservation strategy. 'Unless natural resources have a very high value placed on them, they tend to be displaced by other developments in the country,' he says. 'We've been very successful so far in extend-

ing that philosophy into all the rural areas of Zimbabwe, and our wildlife is continually increasing.'

Put simply, if wildlife has the same value for peasant farmers as their domestic livestock, they will look after it. When asked by

a Western journalist if she had any qualms about wearing an ivory necklace, Zimbabwe's outspoken Minister of Tourism and Natural Resources, Victoria Chitepo, retorted: 'Do you have qualms about wearing shoes?'

Compared with East African countries, where animals have been fenced off and poached indiscriminately, Zimbabwe has 61,000 head of elephant – about twice the country's ideal carrying capacity. Now, with the ivory ban reducing the value of elephants, conservationists fear that more – not fewer – elephants are going to be killed. According to Rowan Martin, 'people are simply not prepared to have elephants on their property when it is a large, valueless animal that eats their crop.'

Martin says wildlife should not be considered an international resource. 'It belongs to the people who pay the cost of its upkeep, in the country where it lives. We regard our wildlife in much the same way as our domestic livestock. And no one thinks of cows and sheep as belonging to the world at large.'

Either way, the future of the African elephant in the wild is now in doubt.

Colleen Lowe Morna/Panos



Tamed, farmed, poached, extinct.

Photo: Kay Lawson/Rapho

Photo: International Labour Office

MEXICO

Popular art of resistance

Strange things are happening in Mexico. A new form of non-violent resistance to the government has burgeoned, with the help of the silk screen.

The Asamblea de Barrio, a grassroots organization with 80,000 members in Mexico City alone, has invited a



specialist design group to teach them how to produce their own silk-screen posters which highlight social problems like homelessness and pollution.

Two of the posters from the workshops have a print run of 10,000 each and are currently plastered all over Mexico City. One tells the voter to keep an eye out for ballot rigging and another demands an end to the appalling pollution problem.

From Creative Review, Vol 10 No 2 1990

COMMODITIES

Cheap coffee

The International Coffee Agreement collapsed in July 1989 and meant that producer countries could sell as much as they wanted on the world markets. Inevitably this led to prices dropping. Taking 1989 as a whole the world price of coffee was halved – down from around 150 cents a lb at the start of the year to below 70 cents at the end. The coffee agreement had tried to stop prices slipping below 120 cents.

According to the World

Bank, world coffee revenues in 1990 will be 35 per cent less than they would have been if the agreement existed. A modest producing country like Tanzania was expecting a \$45 million drop in export earnings from coffee last year.

In December the five Central American countries agreed to withhold 15 per cent of their exportable output until the end of 1990. Much depends on Brazil, the world's largest coffee producer. Continued low prices are likely to prompt it to reduce exports to maintain world prices.

From International Agricultural Development, Vol 10, No.1 1990

DEBT

Marcos legacy

The Philippines government has brought a law suit against Westinghouse Electric Corporation of Pennsylvania to recover the \$2.1 billion spent on the Bataan nuclear reactor. The government alleges the US company bribed former President Ferdinand Marcos to win the contract to build the reactor, which was never used because of fears of radioactive leaks – it was built at the foot of a dormant volcano in an earthquake zone.

The Westinghouse loans are the government's first target in its international debt reduction efforts. During Marcos' 20-year rule, the nation's debt increased from \$4 billion to \$28 billion. Going through the courts will take years, but it saves paying \$350,000 a day in interest payments on the loan.

From Pacific News Bulletin, January 1990

CANADA

Recycling triumph

First Canadian Place in Toronto is Canada's largest office building. Owners Olympia & York Development Ltd are proud that of the 40 tons of garbage generated each day in the building, only 10 tons reaches a landfill – 30 tons are recycled. Revenues from recycling cover the cost of disposing of the rest of the garbage, and any profits go to the tenants.

From World Action for Recycling Materials & Energy from Rubbish, No 24, 1990.

PERSONAL POLITICS

Crimes of passion

Last year the Egyptian public was shocked by a series of seven grisly domestic murders. In each case a wife, often with a large family, killed her spouse. Husband killing, it seems, is not a new phenomenon in Egypt. Many believe it reflects the inequality between the sexes. For all the cases involved marriages where the husband threatened to divorce his wife and marry another. Egyptian law gives all the rights (including that of infidelity) to the husband, who can divorce and remarry at will, or become polygamous.

In 1979 the wife of former President Sadat, Jihan Sadat, instituted a new law giving fundamental rights to wives (including automatic divorce in the case of a second marriage). This 'Jihan law' was reversed in 1985.

From Afrique Magazine, reported in World Press Review, Vol 36/No 12

COMMUNICATIONS

Australian TV

'Last night Channel 7 treated us to an unforgettable experience. Between 8.30 and 11.45, we were the excited recipients of 82 commercials, thoughtfully delivered in batches of seven. They provided all manner of useful information on topics from tourism to personal hygiene and were linked together by some light thing called *Amadeus*. We were delighted that in a 195-minute programme, Channel 7 were able to give us 45 minutes solid advertising.

- 'Perhaps we could improve things further by dispensing altogether with the unimportant movie link?'

Letter in Sydney Morning Herald

ADVERTISING

Sell sell sell

Soon to be added to the range of supermarket techniques to induce dazed shoppers to buy are shopping trolleys that guide you electronically through the aisles to specific items the store is pushing that day. The brain-child of Chicago firm

Information Services Inc, *VideOcards* have a 6" x 8" video screen mounted on the handlebar. At the beginning of each aisle, the cart trips a trigger that flashes a greeting on the screen ('Welcome to Aisle One') and lists the sale items in the aisle. As you approach product displays, additional triggers set off video adverts for the products. The screen can also show recipes. And an 'item locator' helps you find products.

So far three US grocery chains have introduced the trolleys on a trial basis.

From Consumer Reports, Nov 1989

DRUGS

Zapping the nicotine taste

A law banning all ads for cigarettes – or any products bearing a tobacco manufacturer's trademark – came into effect on 1 January 1990 in Singapore. The law tries to cover every loophole by which cigarettes could be distributed free as samples, gifts or lottery prizes. First-time offenders face a US\$5,000 fine or six months in Changi prison.

The health ministry has also decreed that brands sold in Singapore must not exceed 15mg of tar and 1.3mg of nicotine, all specified on the packets.

Perhaps the left hand doesn't know what the right is doing. For in the same month as the new legislative controls, we hear the latest smokeless cigarettes will be manufactured in Singapore. Less cigarettes than synthetic substitutes, these are capsules containing a concoction of tobacco concentrates and artificial flavour. Addicts can suck this out through a plastic tube. Five capsules plus a tube will sell for US\$2.

From South, No 112, 1990

"endquote"

'We did not think of the great open plains, the beautiful rolling hills and winding streams with tangled growth, as "wild". Only to the white man was nature a "wilderness" and only to him was the land "infested" with "wild" animals and "savage" people. To us it was tame. Earth was bountiful and we were surrounded with the blessings of the Great Mystery.'

Chief Luther Standing Bear, of the Oglala band of the Sioux/Lakota people.

Your god, the written word

Lectured about financial honesty, an old man
bites back at the ways of the West. Mari
Marcel Thekaekara recalls a clash between two
worlds in the hills of southern India.

NESTLING amidst the forests and rippling streams of the Nilgiri mountains of Tamil Nadu are little settlements of tribespeople. They are the Todas, the Kotas, the Irulas, the Paniyas, the Moolakurumba, the Kattunaickens and the Bettakurumbas. They have lived here since time immemorial. Today they are termed 'adivasis' by the Government, meaning the first settlers.

The philosophy of these people has remained unchanged for hundreds of years. They were pretty much the sentiments of Chief Seattle to the President of the United States in 1855. 'How can you buy or sell the sky, the warmth of the land, the freshness of the air of the sparkle of the water?' This wisdom was passed on through generations, from grandparent to grandchild.

Into these tribal strongholds came various 'civilized' people who bought and sold the homelands over the heads of the inhabitants. The native people were simply part of the scenery. No-one thought it necessary to consult them. Respecting tribal rights didn't even enter anyone's minds. And so they lost their homelands even while they were living on them. Like the Red Indians in the US and the Aboriginal people of Australia. Like indigenous people in every part of the world.

To combat this our project prompted a questioning process among the younger tribal leaders. Everywhere people began asking WHY? Why are we poor, malnourished, ill? Why have we lost our lands, our forests, our pride, our culture? WHY?

We came across hundreds of cases where people had signed away their land on blank paper in the belief that they were getting ration cards, government pensions or title deeds to their lands. Very few people had papers to show possession of their land. Their logic was simple. It is my land. Why should I need a piece of paper to prove it's mine? Is my word not enough? Slowly we began to understand the tribals' total lack of interest in the literacy drive that government and voluntary agencies were trying to popularize.

We were forming co-operatives or *sangams* in all the villages. Every member contributed ten rupees towards the fund. A meeting at our office was scheduled to teach a group of Bettakurumba tribals how to keep

the *sangam* accounts and write their books. My husband Stan hastily set up blackboard, chalk and duster but when the group of 50 settled down he realized with a shock that only two people were literate. Hastily he put away chalk and papers and began a general discussion on the state of things in the villages and in tribal society. This group lived deep in the forest and consequently were unaffected by urban influences. Their simplicity had remained intact, uncorrupted by outside values and standards.

Gradually the discussion veered towards money and accountability. Stan tried to explain gently that many *sangams* had been utterly ruined because of unscrupulous leaders usurping official funds. This had led to chaos and a generally messy end for the villages concerned. The hard work of months could be destroyed by one

crooked leader if the people were not vigilant.

Mathan, an old Bettakurumba man, turned to look Stan fully in the face. His skin was parchment-like, weatherbeaten, lined with the wisdom of centuries. In his slow, deliberate manner he spoke to Stan as to a little child.

'This man Manben is my leader,' he said, pointing to the chief. 'I and all my tribe have appointed him our headman. He has reached this stature after many moons, having eaten much rice. With many white hairs he has attained this wisdom. Could he have done all this, achieved this position in our society if he were a dishonourable man? Are we fools to elect a thief to be head of our people? And is he an imbecile to throw away the honour and prestige and dignity of his chieftainship, the respect of his people, the veneration of the young ones, for a few hundred rupees?

'You attach so much importance to some figures written on a piece of paper, a book. Do men lack honour that the spoken word has so little importance in your world? Why so much value, so much worship, for the same words merely because they are transferred to a piece of paper?'

We had no words to answer him. In silence and in shame I wondered, could I convey his wisdom to our literate millions?

Mari Marcel Thekaekara has been working for the last seven years on a project she and her husband started for indigenous people in south India.



 I think.
by Martyn Turner

We invaded Grenada to
protect the lives of
American citizens



We invaded Panama to
protect the lives of
U.S. citizens...



There are 197 other
countries in the world with
U.S. citizens who might
need protecting...





Wild things: Willem Dafoe and Tom Cruise as Vietnam veterans.

★ FILM

Born on the Fourth of July directed by Oliver Stone

Oliver Stone has done it again. **Born on the Fourth of July**, the second Stone entry into the Vietnam War film derby, hits America where it hurts. The movie is based on the life (and autobiography) of Ron Kovic, who founded Vietnam Veterans Against the War. In some ways Kovic's story is typical of the US 'fighting man'. He grew up in a patriotic fog as part of a working-class family on Long Island ruled over by a puritanical mother. This made Ron fertile ground for the Marine Corps recruiting pitch to 'be the best you can be'. For his trouble Kovic spent two tours in Vietnam where he learned to kill and was crippled for life.

The film traces Kovic's gradual and painful awakening to the official deceptions of US policy about fighting communism (now read drugs) and defending the 'free' world. Stone's ability as a storyteller and some brilliant camera work give us a sense of the struggle of a generation to overcome their political innocence and challenge a militaristic culture. And Tom Cruise's role helps his own coming of age as an actor after early transgressions like *Top Gun*.

Still Stone's success is at times marred by emotional manipulation through overstatement. Excess is Hollywood's prime currency and Stone spends it liberally. Scenes such as those in Mexico or in the veteran's hospital in the Bronx seem overdrawn to the point of caricature: he demands and gets our empathy but one can't

help recalling that this technique of emotional identification is also used (though not as skillfully) to propagate the Rambo view of the Vietnam War. But if Stone had rejected the tools of Hollywood, **Born on the Fourth of July** would undoubtedly not be topping the film charts for early 1990.

Politics ★★☆☆
Entertainment ★★☆☆

Limit Up directed by Richard Martini

A woman frustrated in her career by the sexism at work makes a Faustian pact, trading her soul for a shot at the commercial big time. She becomes a successful futures trader at the stock exchange – but ultimately gives it all up, realizing that she is making money at the expense of the hungry in the Third World.

Sounds promising? We thought so too but unfortunately **Limit Up** is one of the limpest, most feeble comedies this side of *Police Academy 23*. Conceived long before the success of *Working Girl*, this is now

being marketed as a 'women's picture' in the same mould. But there is a vital difference between the two: the Melanie Griffiths film had a notably sharp script whereas Nancy Allen, star of **Limit Up**, has to contend with plot- and dialogue-lines that make you laugh for all the wrong reasons.

There is no critique of the stock exchange or the money-grubbing of the individuals who drive it – its only fault appears to be the male prejudice which excludes women from the money-grubbing. And by the end even that problem is overcome as the heroine is welcomed into the club: thus 'feminism' is hijacked, the hungry are saved, God's in his heaven and all's right with the world. Hallelujah for Hollywood.

Politics ★
Entertainment ★

★ MUSIC

Colour by the Christians (Island)

The success of the Christians' debut album was staggering, breezing out of nowhere to garner an abundance of hit singles and sell a million. Though the band's title derived from the names of brothers Garry and Russell Christian, it also reflected the overt message of songs like *Save a Soul in Every Town* and was proof that religious commitment could be seen as hip – something they might thank U2 for.

Colour will have no problem emulating that success – if anything its songs are stronger, its textures even more lush and its performances even more assured. It is less specifically in the soul tradition than the first album – though again the call-and-response vocals are used to stunning effect and the gospel closer *In My Hour Of*



Need (complete with choir) is one of the tracks that lingers longest in the memory.

Two worries. The first is less the Christians' problem than one thrust upon them. Their political conscience has been talked up, even in reviews of this album. But there are here only the blandest generalities: faith can move mountains, the whole world's corrupt, politicians are all talk. This is the perception of the apathetic and apolitical adolescent rather than a worked-out world-view – it can serve in one song but wears pretty thin over a whole album.

Second, the music here is so polished, so apparently effortless, that songs which are individually impressive end up in a package that seems a touch too clean, too seamless. Garry Christian's creamy voice only adds to that impression. But being criticized for being too good will hardly alarm them.

Politics ★★☆☆
Entertainment ★★☆☆

★ BOOKS

Children's Books by various authors

Books for children of all ages which have multicultural depth and non-sexist settings are a growth industry – and they need to be, since there are still far too many which revolve around a whiter-than-white nuclear family where mother stays at home and father works. And as the world shrinks and our own horizons lift, there is no reason why our children should not be imbibing a sense of One World from their own literature.

Siyalunga! is produced by a South African group called EDA (PO Box 62054, Marshalltown 2107, South Africa). Aimed at pre-school ages, it contains no words but rather a set of glossy colour photographs showing the lives of black children in rural South Africa. In contrast to this glossiness, the teacher's notes are contained on a loose photocopy, which is a shame since overseas parents and teachers certainly need them. 'Siyalunga!' means 'We're getting ready!' (for the end of apartheid).

Two recent American books for children under ten aim to convey the richness of the Indian culture that was



Ray Charles as hip archangel in *Limit Up*: neat idea, dumb movie.

REVIEWS

swamped by white invaders. **My Grandmother's Cookie Jar** by Montzalee Miller and Katherine Potter (*Price Stern Sloan, 360 North La Cienega Boulevard, Los Angeles, Ca 90048*) has a girl learning about her heritage through the stories of her grandmother. When the old woman dies, the girl understands the importance of keeping her stories alive - a simple idea well done. **Buffalo Woman** by Paul Goble (*Bradbury Press, 866 Third Ave, New York, NY 10022*) presents an ancient legend of the Plains Indians - a love story whose message is the essential union between humans and animals. The stylized illustrations here are genuinely beautiful, as much a pleasure for an adult as for a child.

A much more down-to-earth journey into another culture is provided by a British book for the same age-group, **Visiting Junjun and Meimei in China** by Janet Whitaker (published by *Cambridge University Press* in the UK, US and Australia). Through colour photos and



A growth industry: children's books from four different countries.

detailed, though always accessible, text this gives a full picture of what life is like for children in a typical rural village near Wuhan. Again the adult reading this would discover a great deal

about China that they would never get from a newspaper.

And on the anti-sexist front there is the Canadian story for five-to-seven year olds, **My Dad Takes Care Of Me** by Patricia

Quinlan and Vlasta van Kampen (*Firefly Books, 3520 Pharmacy Ave, Unit 1-C, Scarborough, Ont M1W 2T8*). Here a boy learns to come to terms with his father's unemployment: 'I don't like my dad to be sad,' he says, 'so I hope he gets a job he wants. But I like my dad being at home. My stomach doesn't hurt any more when the kids in school ask "What does your dad do?" I tell them "My dad takes care of me".'

British readers can get hold of all of these titles from Letterbox Library, which specializes in non-sexist and anti-racist children's books. Address: 1st Floor, 8 Bradbury St, London N16 8JN. Tel: 01 254 1640.

★ STAR RATING

Excellent	☆☆☆☆☆
Very good	☆☆☆☆
Good	☆☆☆
Fair	☆☆
Poor	☆

Reviews editor: Chris Brazier

CLASSIC

The Book of Laughter and Forgetting

... being the book that explored the totalitarian mind

THE title intrigued me - made me buy the book. That, and the title of the series to which it belonged: *Writers From 'The Other Europe'*. 'The Other Europe'. What does that mean now? Then, nine years ago, that meant to me somewhere very distant and pretty grim; a grey and uniform mass behind the Wall. Now The Other is coming in from the cold: a timely moment to re-read a book which so vividly challenged the absorption of a nation into 'the Eastern bloc'.

At the time of the Soviet invasion of Czechoslovakia in 1968 Milan Kundera was a professor in the Prague film institute. He was soon fired, and forbidden to publish in his own language. His books were removed from libraries and shops. In 1975 he moved to France and was stripped of Czech citizenship. In an interview at the end of this book he says: 'If someone had told me as a boy "One day you will see your nation vanish from the world", I would have considered it nonsense, something I couldn't possibly imagine ... But after the Russian invasion every Czech was confronted with the thought that his nation could be quietly erased from Europe.'

'Vanish', 'erase', 'dissolve', 'liquidate'. These are the words Kundera uses. This is the 'forgetting' of the title: a country was invaded, its identity wiped out, its history rewritten, its thinkers silenced. Or so it seemed. It is thanks to the courage of people like Kundera - and to books like this - that the cultures of the countries of Eastern Europe were kept alive.

But this book is not just about the last 20 years. Kundera points out that in a half-century Czechoslovakia has experienced democracy, fascism, revolution, Stalinist terror, the disintegration of Stalinism, German and Russian occupations, mass deportations. He describes how streets are renamed with each new system, how monuments rise and fall, how people are punished for not toeing the latest line.

As novelist rather than historian, however, Kundera is primarily interested in what shapes and motivates people, and why. He takes a handful of themes - history, memory, power, laughter. With a light touch and a wry smile he teases them, probes them. The themes are what shape the book, and they are explored in stories, imaginary

acters and flights of fancy; hard facts, autobiography and political debate. In his own words, the book is 'a novel in the form of variations. The individual parts follow each other like individual stretches of a journey leading toward a theme, a thought, a single situation'.

The route takes you into one country and its politics but also goes way beyond. It explores the way private and public life are governed by the same laws: invasions, whether of individual privacy or of a country, are abuses of power. If political propaganda recreates the past, so too do individuals: we all distort, select and reinvent history. And what are we but the sum of everything we remember? What do we fear? Forgetting: the loss of our past, our identity. Collectively and individually, the 'struggle of man (sic) against power is the struggle of memory against forgetting'. Memory plays tricks; we play tricks with memory. We search for meaning yet we live only inches away from the dividing line where everything seems senseless and ridiculous: 'It takes so little, so infinitely little, for a person to cross the border beyond which everything loses meaning: love, convictions, faith, history.'

This is where the laughter comes in. There are two kinds of laughter: one expresses security and knowledge and the other ridicules and mocks; one affirms meaning and the other denies it. 'People nowadays do not even realize that one and the same external phenomenon embraces two completely contradictory internal attitudes.' These are the twists and turns that Kundera takes. He explores the sublime and the ridiculous contained in sexuality; the 'lyricism' and 'horror' within childhood; the dividing lines between innocence and corruption, fanaticism and skepticism.

And he writes: 'Totalitarianism is not only hell, but also the dream of paradise - the age-old dream of a world where everybody would live in harmony, united by a single common will and faith, without secrets from one another... Once the dream of paradise starts to turn into reality, however, here and there people begin to crop up who stand in its way, and so the rulers of paradise must build a little gulag on the side of Eden...' He examines the problem of power in a way relevant not just to his own country as it opens a new chapter of its history but also to us all.

Wit, eloquence and sharply drawn images lure you in and carry you along. Almost before you know it Kundera takes you to the heart of his concerns and leaves you with no easy escape routes, few answers. Indeed, he writes of the 'noisy foolishness of human certainties'. He asks big, serious questions, always with a twinkle in his eye.

Tess Lemmon

The Book of Laughter and Forgetting by Milan Kundera.

Sudan



Photo: Peter Solbjerghoj

Leader Lieutenant-General Omer Hassan Ahmed el-Beshir

Economy GNP per capita \$330 (US \$18,530)

Monetary unit: Sudanese pound

Inflation is unrecorded and out of control. Imports include food and consumer goods. Main exports are cotton, livestock, sesame, peanuts and gum arabic (used in ink, food thickeners and pills).

People 23.8 million

Health Infant mortality 107 per 1,000 live births (US 10 per 1,000)

Culture Arabs make up 39 per cent of the population, Dinka (in the South) 20 per cent; there are 19 ethnic groups and some 600 sub-groupings.

Religion: Islam 70 per cent, Christianity four per cent, many traditional and/or animist beliefs.

Language: Arabic is the official language, English is frequently used among elite. There are reckoned to be 115 languages, 26 of them spoken by more than 100,000 people.

Sources: State of the World's Children 1990 and information supplied by author.



'WHOEVER has drunk from the Nile, whose power over life and death gives it magical properties. Death has the edge at the moment as Africa's largest country is torn apart by civil war and people are united only in their ability to withstand suffering.

In the droughts of the 1980s outsiders predicted a massive famine toll in the desert and scrub of the mainly Arab North. Here rich farmers and merchants exploit peasant farmers and nomads, and export their wealth. The outsiders were wrong. The poor simply shifted to a lower level of existence, eked out with berries, leaves and grass. All but a few thousand refused to die as predicted.

In the savannah and swamps of the largely African South, the seven-year war of the Sudan People's Liberation Army (SPLA) against four successive Khartoum regimes has cost hundreds of thousands of lives. Government-armed tribal militias loot, rape and murder civilians, sell

children into slavery and leave famine in their wake.

But even after walking 1,000 kilometres or more to a refugee camp, the once-proud cattle herders and farmers of the South endure. Two million now live in squalor in refugee camps or northern shanty towns.

It was 35 years ago that the Anglo-Egyptian colonial powers abandoned the comparatively developed North and the totally underdeveloped South. This ushered in a 17-year civil war and a procession of bitterly divided civilian governments alternating with military regimes.

Sudan's vast size and limited infrastructure, decades of declining rainfall, environmental degradation, falling crop yields and erratic commodity prices have all handicapped development. Ethnic and religious diversity, and a flow of resources towards the triangle of Khartoum, Port Sudan and the irrigated cotton fields of the Gezira, have fostered the divisions leading to civil war.

Politically, there have been few bright spots and today's regime is the worst yet. Backed by Islamic fundamentalists, some of whom favour Sudan's partition, its inexperience and incompetence is destroying the economy. The reintroduction of Islamic law in the form of kangaroo courts and brutal punishments is worsening the war with the SPLA, whose leader Colonel John Garang proposes a unified, federal, secular and socialist 'new Sudan'.

Even the aid agencies are beginning to pull out, despite the millions in need of food, health care, clean water and education. The junta is blocking relief shipments and development efforts. It stands accused of a campaign to starve the South that would result in genocide.

Nick Cater

At a glance



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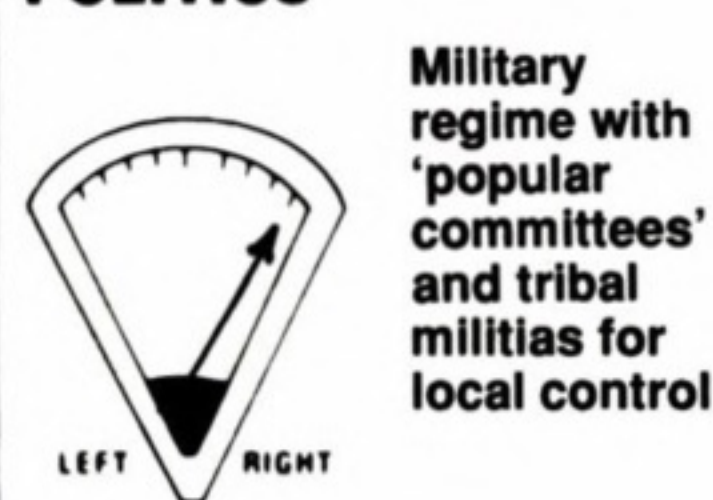
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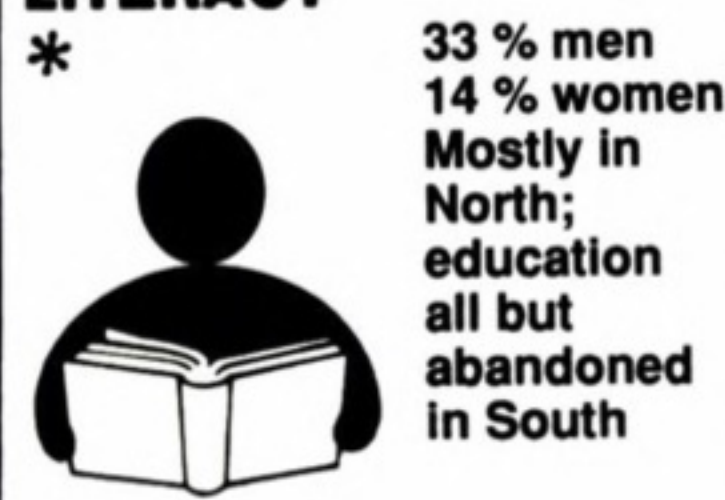
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THE PEACE TAX CAMPAIGN'S AGM will be held on Saturday 21st April at the Connaught Hall, Tavistock Square, London WC1 from 11am to 5 pm. Full wheelchair access; creche available. Contact: *Lorna or Phil on 01-739 5088*

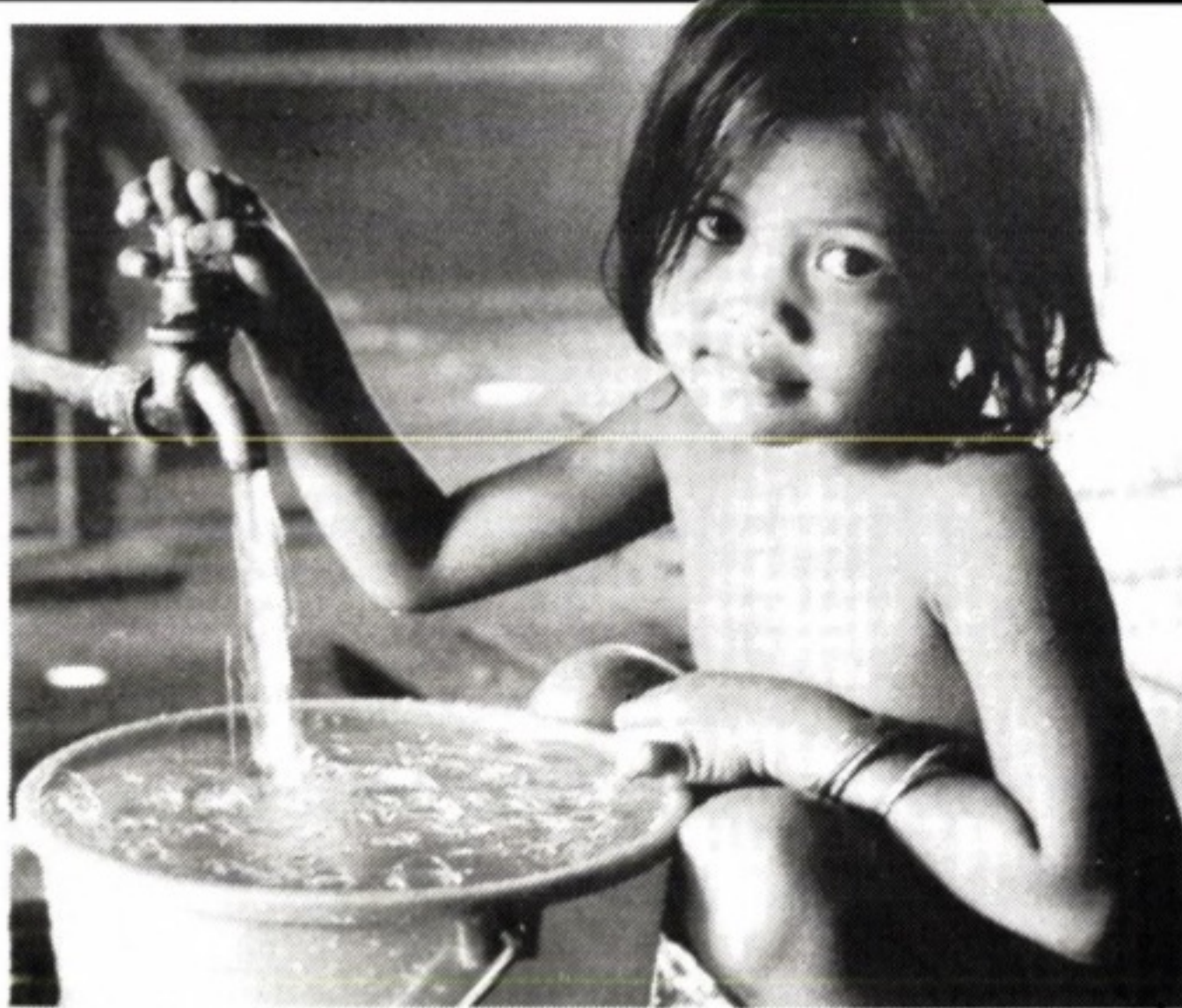
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COMING NEXT MONTH



Water

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At the end of the United Nations Decade that aimed to bring all the world's people clean water and adequate sanitation, the **NI** examines our progress towards a world where water is once again a trusted friend – rather than a commodity to be bought and sold.

Stories include:

- Exporting a bad example. No other country has a private water industry quite like the British have just had thrust upon them. And now the water barons are selling the idea to the Third World.
- Handpumps and latrines. What the UN Decade has done – and not done – seen from the point of view of villagers in Asia, Africa and Latin America whom it was supposed to benefit.
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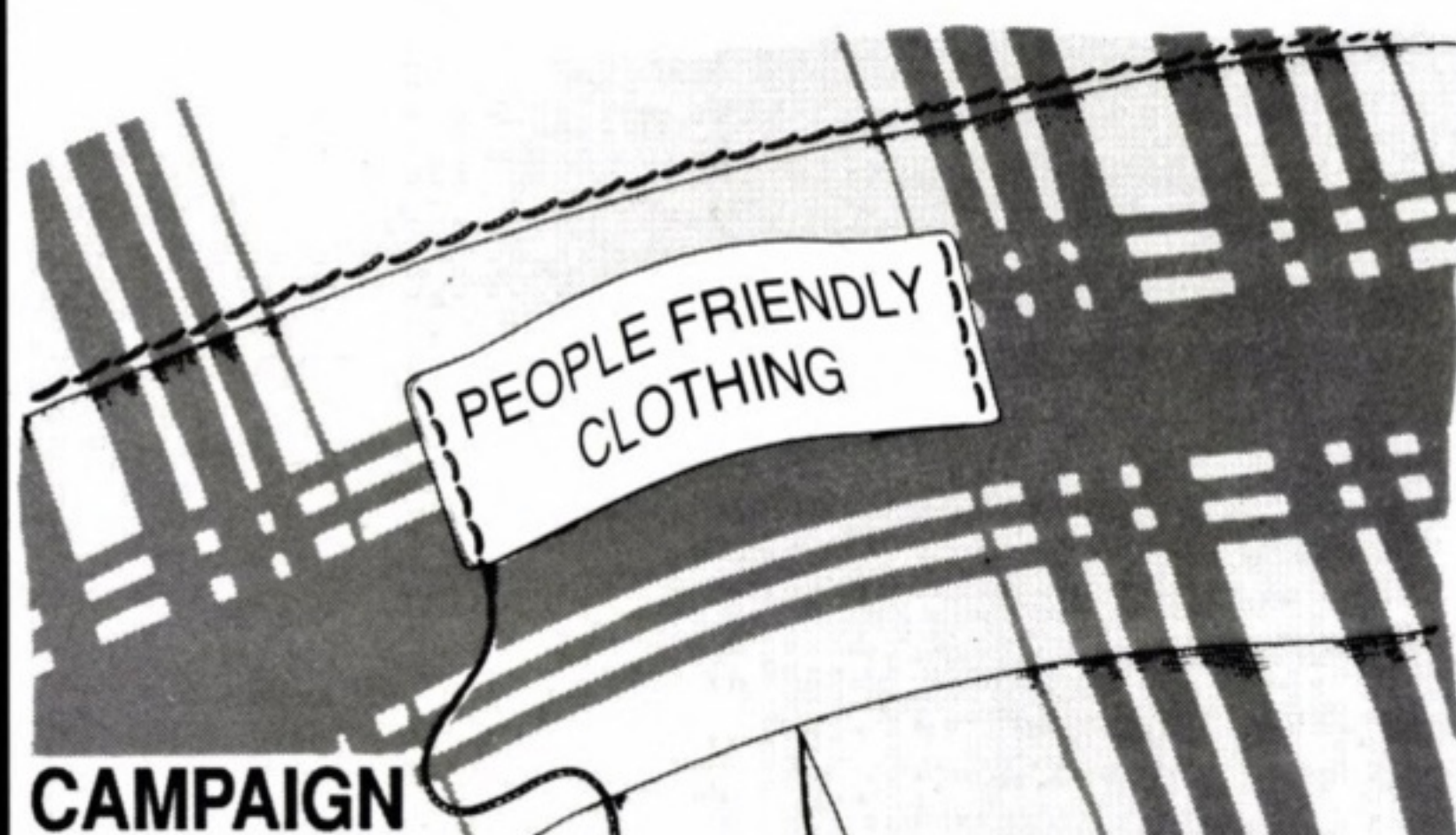
The Institute of Development Studies wishes to appoint a Research Fellow in the area of gender issues in less developed countries. The Institute's Gender Cluster is involved in research, teaching and training activities which deal with the gender dynamics of socioeconomic transformation, and is currently putting together a major research programme on household and gender relations in the context of structural adjustment. In addition, members of the Cluster are responsible for co-direction of a one-year MA Course in Gender and Development (with the University of Sussex).

The person appointed should have a good social science background with some teaching and training experience. Practical experience in gender-related issues in the Third World or policy issues related to Third World women would be an advantage.

The appointment will be for three years initially and the Institute expects to appoint within Range IA £10,458 – £16,665 or Range II £15,372 – £20,469 of the Universities Research and Analogous Faculty Salary Scales.

Further particulars and application form from
**Ms. Felicity Harrison, Personnel Office, Institute of Development Studies at the University of Sussex,
Brighton, Sussex BN1 9RE, UK. Tel: (0273) 678276.**

Closing Date: 30th April 1990



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